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IN THE

Supreme Court of the United States

OCTOBER TERM, 1976

No. 76-1788

ST. REGIS PAPER COMPANY,

Petitioner,

v.

BEMIS COMPANY, INC.,

Respondent.

APPENDIX TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SEVENTH CIRCUIT

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dicial impact outweighed its probative value, and it should have been excluded under Fed.R.Evid. 403. Stumes asserts that the court should have limited the testimony concerning the prior offense to the fact that Lund had been a witness against him in a prior proceeding.

The circumstances surrounding appellant's manslaughter conviction are relevant to establishing his motive, intent and identity as the author of the threatening letter. Moreover, since the letter itself infers that its writer was imprisoned for a homicide offense, the prejudicial impact of the challenged testimony is not so great as to require exclusion under Rule 403. We conclude that the district court did not abuse its discretion in admitting the challenged testimony.

Affirmed.

ST. REGIS PAPER COMPANY,
Plaintiff-Appellee,

v.

BEMIS COMPANY, INC.,
Defendant-Appellant.

No. 76-1044.

United States Court of Appeals,
Seventh Circuit.

Heard June 16, 1976.

Decided Feb. 3, 1977.

A holder of patents on paper bags brought an action for patent infringement. The United States District Court for the Southern District of Illinois, Northern Division, 403 F.Supp. 776, Robert D. Morgan, Chief Judge, held the patents valid and infringed, and defendant appealed. The Court of Appeals, Swygert, Circuit Judge, held that the patents were invalid as being obvious.

Reversed and remanded.

Pell, Circuit Judge dissented and filed opinion.

1. Patents ⇐112.1

Presumption that issued patent is valid is rebuttable and not conclusive, and such presumption cannot stand in face of compelling contrary facts. 35 U.S.C.A. § 282.

2. Patents ⇐328(2)

Patent No. 3,650,460, for method of sealing paper bags so as to prevent leaking and sifting better than previously existing bags, was invalid for obviousness. 35 U.S.C.A. § 103.

3. Patents ⇐66(1.24)

Where prior patent was one on a type of paper bag, not on a method for manufacturing such bag, it would not be rejected as prior art for subsequent patient on paper bag on ground that method for manufacturing bag covered by prior patent was unworkable.

4. Patents ⇐328(4)

Reissue patents Nos. 28,317 and 28,318, on specialized paper bags designed so as to prevent leaking and sifting better than previous existing paper bags, were invalid for obviousness. 35 U.S.C.A. § 103.

Irving Powers, John K. Roedel, Jr., St. Louis, Mo., for appellant.

Raymond J. McElhannon, Norman H. Zivin, Clyde H. Haynes, New York City, William T. Rifkin, Chicago, Ill., for appellee.

Before SWYGERT, CUMMINGS and PELL, Circuit Judges.

SWYGERT, Circuit Judge.

The outcome of this appeal turns on the validity of United States patent 3,650,460 and reissue patents 28,317 and 28,318. All three patents claim the invention of specialized bags which prevent leaking and sifting

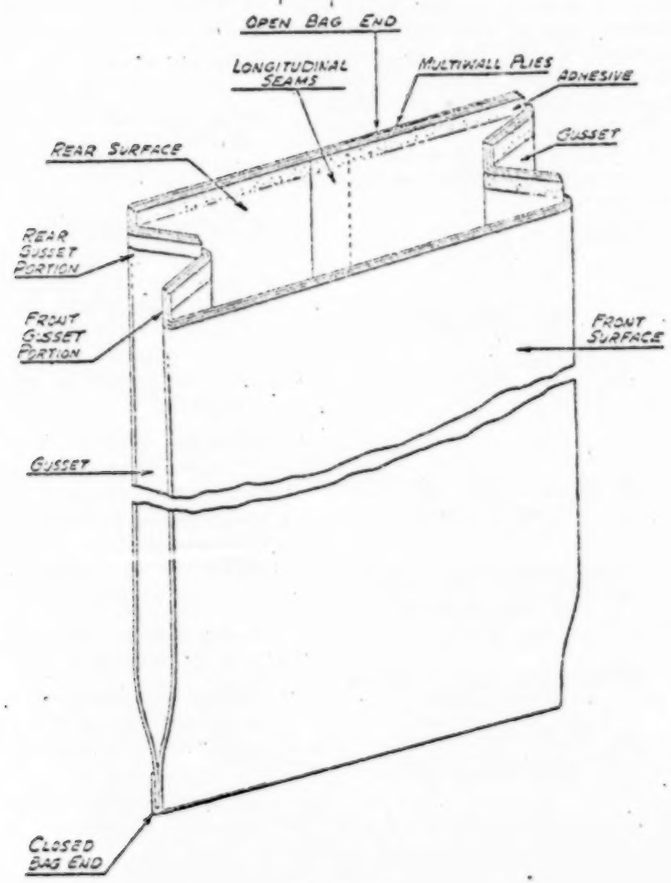
better than previously existing bags. We do not find the bags to be nonobvious within the meaning of 35 U.S.C. § 103, and therefore reverse the judgment of the district court which held the patents valid.

I

The subject of patent 3,650,460 (hereinafter the "Lokey" patent) is best described by reference to Figure 1.

A-1

Fig. 1.



It is a bag of tubular form consisting of several contiguous layers of flexible sheet material, such as paper. The bag is creased to provide a bellows effect so that it will lie flat until filled. Each of the panels formed by the crease is called a "gusset." The rear surface of the bag is longer at the top than the front surface, allowing the rear surface to be folded over and glued to the front surface, thereby closing the top of the bag.

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The bag is closed at the bottom in the same manner,* and is therefore a "pinch bottom" bag.

The front gusset panel or portion of each bag is longer than the front surface of the bag. The rear gusset panel is correspondingly longer than the front gusset panel, and the rear of the bag is longer than the rear gusset panel. Accordingly, the parties referred to the Lokey bag as a "three-step" bag. The three-step nature of the bag allows for better sealing, because the top of each gusset panel, as well as the top of the rear of the bag, can be glued to the front of the bag.

The reissue patents (hereinafter "Goodrich '317" and "Goodrich '318") cover refinements of the Lokey bag. In '317, the layers of the bag are cut flush with each other at the top of the gusset panels, but are ascendingly stepped at the top of the front and rear surfaces. *See* Figure 3. In '318, the layers are stepped both at the top of the front and rear surfaces, and at the top of the gusset panels. *See* Figure 4.

A-2

Fig. 2.

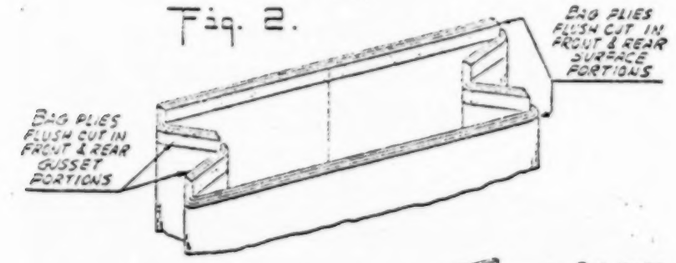


Fig. 3.

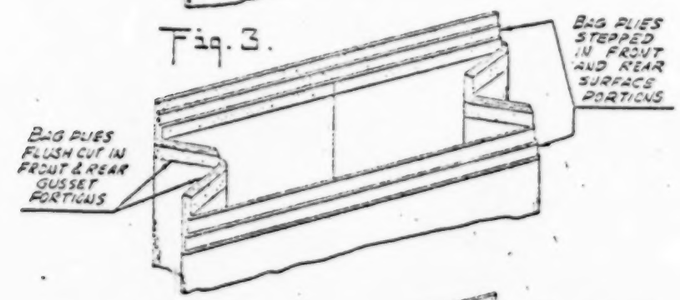
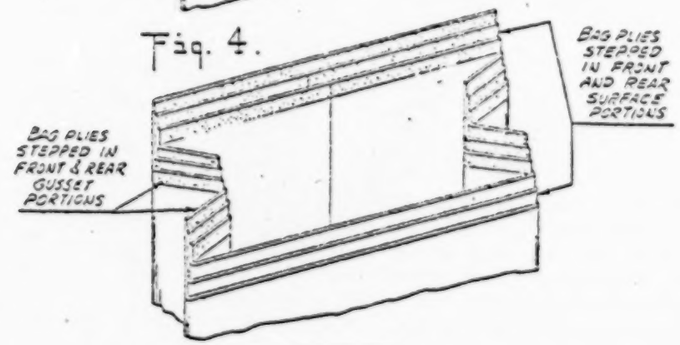


Fig. 4.

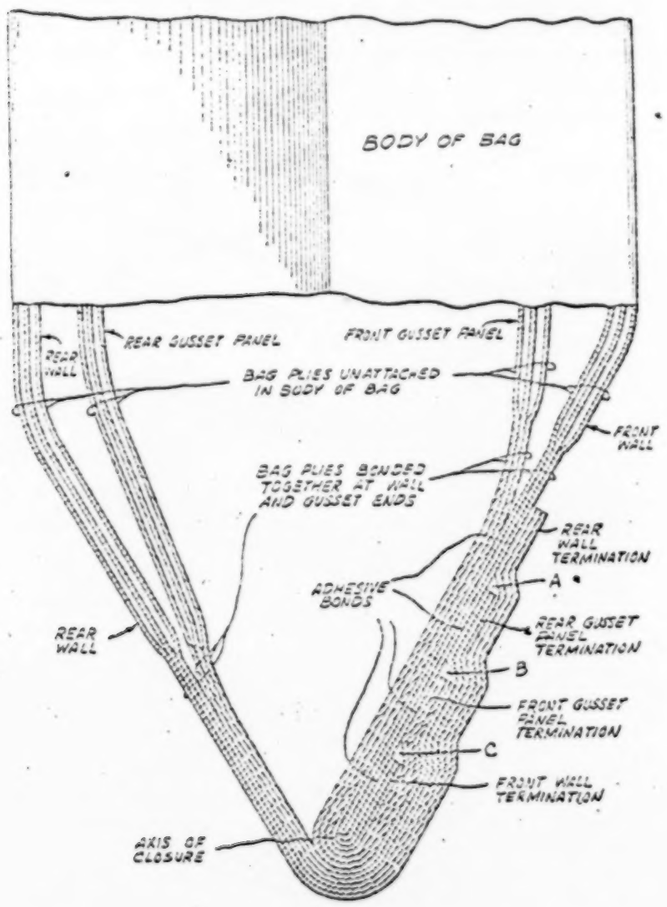


* At the bottom of the bag the front surface is longer than the rear surface so that closure is achieved by folding the front surface over the rear surface. *See* Figure 1.

The stepping of the layers allows each layer to be individually attached to the front surface when the bag is closed, further preventing leaking or sifting. *Compare* Figure 5 (Lokey patent—flush cut layers) *with* Figure 6 (Goodrich '318 reissue patent—each layer stepped). In addition, both reissue patents call for the bag end to be sealed by a preapplied reactivatable bonding agent known as hot melt adhesive rather than by the application of glue after the bag is filled.

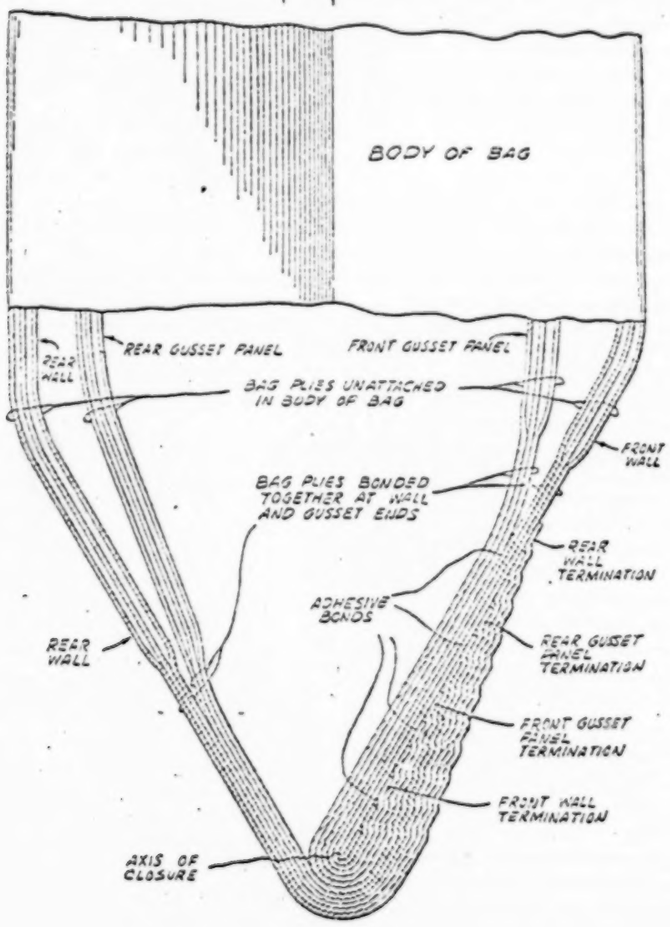
A-3

Fig. 5.



A-4

Fig. 6.



Appellee St. Regis is the owner of the Lokey patent and was the owner of Goodrich and Waxlax United States patents 3,687,356 and 3,776,451, which incorporated improvements on the Lokey patent. It filed suit against appellant Bemis for infringement of those patents on April 9, 1973. At the close of trial, the Goodrich reissue patents '317 and '318 were substituted for the original Goodrich and Waxlax patents. The district court entered a decision holding all three patents valid and

infringed on November 12, 1975. Bemis now appeals from that decision, contending both that the patents are invalid because they were obvious extensions of the prior art and that St. Regis should be estopped from bringing an infringement action because the Patent Office was not fully informed about the prior art when it granted the patents. Because of our resolution of the first issue, we do not reach the second.

II

35 U.S.C. § 103 states that "a patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The Supreme Court has held that section 103 was intended to codify the requirement of nonobviousness that had been formulated by courts beginning with *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248, 13 L.Ed. 683 (1851). *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). These courts have refused to uphold the validity of a patent if "the improvement is the work of the skilful mechanic, not that of the inventor." *Hotchkiss*, 52 U.S. (11 How.) at 267, 13 L.Ed. 683.

Moreover, the Supreme Court has recently indicated that section 103 cannot easily be satisfied by inventions that rearrange old elements in new combinations with each element performing the same function it performed in the prior art, even though the new combination produces a more striking result than the old ones. *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282, 96 S.Ct. 1532, 1537, 47 L.Ed.2d 784 (1976). 'Unless the combination is "synergistic, that is, 'result[ing] in an effect greater than the sum of the several effects taken separately,'" it cannot be patented. *Id., citing Anderson's—Black Rock v. Pavement Co.*, 396 U.S. 57, 61, 90 S.Ct. 305, 24 L.Ed.2d 258 (1969).

III

[1] It is with these considerations in mind that we must determine whether the three patents at issue are valid. We note that under 35 U.S.C. § 282 an issued patent is to be presumed valid. The district court relied heavily on this presumption in upholding the validity of the three patents. However, this presumption is rebuttable rather than conclusive. It cannot stand in the face of compelling contrary facts. *See, e. g., American Infra-Red Radiant Co. v. Lambert Industries, Inc.*, 360 F.2d 977, 989 (8th Cir.), *cert. denied*, 385 U.S. 920, 87 S.Ct. 233, 17 L.Ed.2d 144 (1966); *Groen v. General Foods Corp.*, 402 F.2d 703, 711 n. 2 (9th Cir. 1968). The question of patent validity is ultimately one of law and we must examine the facts ourselves in determining whether the standard of section 103 has been met. *See Graham v. John Deere Co.*, 383 U.S. at 17–18, 86 S.Ct. 684.

A. THE LOKEY PATENT

The Lokey bag consists of four elements: (1) it has gussets; (2) it uses a pinch bottom; (3) it has the three-step feature at the top and bottom; and (4) it has multiple layers. Bemis argues that Poppe patent 2,209,901, issued by the Patent Office in 1940, incorporates a bag with the first three elements of the Lokey bag. An examination of the Poppe patent shows that this claim is correct. See Appendix A.

Bemis has further demonstrated that the fourth element of the Lokey bag, its use of multiple layers to achieve the effect of many bags within one, has been known in the bag industry for many years. In fact, St. Regis admitted during the course of litigation that it has sold gusseted multiwall bags in the United States since the early 1930's.

[2] Therefore, the Lokey bag is only entitled to a patent if the fusion of the old elements that comprised the Poppe patent and the old element of multiple layering created a synergistic combination. We hold that it did not do so. While the addition of multiple plies to the concept of the Poppe bag undoubtedly made it stronger and even may have been necessary to make this type of bag commercially feasible, it is not the type of innovation for which a patent monopoly is to be granted. It is difficult to conceive of a more obvious method of strengthening a certain type of bag than putting one bag inside of another.

[3] St. Regis asserts that the Poppe patent should not be accepted as prior art because the method for manufacturing the Poppe bag suggested in that patent was unworkable. We disagree. Whether the method of construction suggested by the Poppe patent was unworkable is irrelevant to the resolution of this case. Poppe patented a bag, not a method for manufacturing that bag, and the finished product disclosed in the Poppe patent constitutes prior art which must be compared with the Lokey patent to determine whether the Lokey bag was a nonobvious advance.

B. THE GOODRICH REISSUE PATENTS

[4] The two features of the Goodrich '317 and '318 patents that distinguish them from the Lokey patent are the progressive stepping of the plies and the use of hot melt adhesive. We hold that neither element is sufficiently nonobvious to sustain the validity of the reissue patents under section 103.

The concept of stepping the plies of a multilayered bag is revealed in Windmöller and Hölscher French patent 1,227,176. See Appendix B. While the Windmöller bag was not gusseted and did not call for the stepping of all of the plies, the transition from the Windmöller bag to one which was gusseted and had all of the plies stepped was not a difficult one for one skilled in the art of manufacturing bags. Moreover, the transition from the Lokey bag to the reissue bags would not have required great inventive flair for a person skilled in the art. The stepping of all of the plies was the work of a skillful mechanic rather than an inventor, and therefore their incorporation in the reissue bags is not entitled to patent protection under the standard of *Hotchkiss v. Greenwood*.

Similarly, the use of hot melt adhesive in the reissue bags did not create a synergistic combination. As St. Regis admitted at oral argument, hot melt adhesive is well known in the art, and its use in place of glue did not transform Goodrich '317 and '318 into concepts which had effects greater than the sum of the effects produced by the old elements on which they were based.

The judgment of the district court is reversed and the cause remanded for further proceedings consistent with this opinion.

PELL, Circuit Judge, dissenting.

The multiple and complex issues presented by this appeal were painstakingly and critically addressed and disposed of by the district court in arriving at the conclusion that the patents in issue were valid and infringed. *St Regis Paper Company v. Bemis Company, Inc.*, 403 F.Supp. 776 (S.D. Ill.1975). I am satisfied that not only were the district court's findings of fact not clearly erroneous but that the district court reached the correct result for substantially the correct reasons. I therefore would adopt that opinion as the opinion of this court. I therefore respectfully dissent.

I must add it strikes me that an unfortunate result of the majority opinion may well be to chill truly inventive combinations which should be as much entitled to patent protection as are the increasingly rare completely "new under the sun" inventions.

Appendix A to follow.

APPENDIX A

Patented July 30, 1940 2,209,901

UNITED STATES PATENT OFFICE

2,209,901

METHOD OF MAKING SIFTPROOF BAGS

George W. Poppe, Brooklyn, N. Y.

Original application September 15, 1937. Serial No. 163,693. Divided and this application April 7, 1939, Serial No. 266,478

3 Claims. (Cl. 93—35)

This invention relates to a method of producing a siftproof bag of the character known in the art as a gusset, bellows fold, or square bottom bag and is a division of my application, Serial Number 165,693, filed September 15, 1937.

A primary object of the invention is the production of a siftproof bag of the character above set forth by a method which enables it to be made at a high rate of speed by known bag machinery.

Since the method in commercial production is practiced on a bag machine, it will best be understood when described in connection with such machine.

In the accompanying drawings,

Figure 1 is a top plan view of portions of a bag machine of known construction, and showing how a web of paper is cut and folded into a tube, from which bag sections are successively formed;

Figure 2 is a bag section, after severance from the tube, but prior to folding over of the bag bottom;

Figure 3 is a perspective view showing the bag in partly opened condition to more clearly indicate its general construction; and

Figure 4 is a side elevation, partly broken away, of so much of a machine of known construction as will sufficiently illustrate how my method is practiced and the bag produced at the high speed necessitated by commercial requirements.

In order that the description may accord with that of the parent case, I have used the same reference characters to designate the same parts in the present divisional application as in the parent case.

Referring to Figures 1 and 4, a web of paper 11 carried by a roll 12 passes from said roll over suitable guiding rollers 13, and about a roller 14 where the edge of the web receives a line of paste indicated at 15, Figure 1 and supplied by a disc 16, Figure 4 which dips into a paste pot 17. From the roller 14 the web passes over another roller 18 made of rubber or similar material and as it passes over said roller the web is perforated by a serrated edge knife carried by a cylinder 20. For convenience, in manufacture and assembly, the knife is preferably made in sections and each section may be independently adjustable in the cylinder 20, although, of course, a knife might be constructed in one piece and shaped as shown.

Assuming a sectional construction, the center section 22, Figure 1 makes a series of perforations in the web which determine the top and bottom edges of the plain wall of a bag portion prior to folding the bottom. Sections 24, adjacent the section 22 form the top and bottom edges of one ply of the bellows fold. The sections 24 are in alignment with each other but are stepped from the section 22. The sections 26 are likewise in alignment with each other but are stepped from the sections 24, these sections 26 forming the top and bottom edges of the other ply of the bellows fold. Sections 25 are in alignment with each other but each stepped from the adjacent section 26 and form the bottom and top edges of the seam wall of the bag when the web is folded into a tube. The lines of perforations 22a, 24a, 26a and 25a, Figure 1 show the condition of the web after the knife sections correspondingly numbered, have acted upon it as the web passes over the roller 18.

After the web is perforated as above described, it passes under a roller 30, Figure 4 and under a former 32 about which it is folded by the usual mechanism to produce bellows folds between the bottom plain wall 1, Figure 2, and the upper seam wall 2. The seam wall is produced by folding the pasted portion 15 over onto the opposite longitudinal edge of the web as indicated in the lower portion of Figure 1.

The folded tube and web are fed through the machine by means of the usual feed rollers 34, Figure 4, from which rollers the tube passes over the clamp cylinder 36 having the usual clamps for receiving the bottom folded portion of the tube, such fold being produced by the usual tucker blade 38 carried by a roller 40. This roller also carries one or more paste bars 42 which supply the paste to the seam wall of the bag just after the action of the tucker blade to tuck the end of the tube into the clamp. The cylinder 36 is rotated in such a manner that the peripheral speed is greater than the peripheral speed of the feed rollers 34 and therefore when the tucker blade tucks the end of the bag tube into the clamp a bag tube section is severed from the main tube. A severed section is indicated at the lower portion of Figure 1 which also shows the bottom of the section folded over and pasted, thereby forming the completed article. Figure 2 shows a section somewhat enlarged from that shown in Figure 1 and prior to the pasting of the bottom. The line of fold, however, is shown along the line 4—4 and the paste area is indicated by the reference character 6.

In the completed bag therefore the lower edge of each ply of the bellows fold indicated at 4, Figures 2 and 3 is off-set from the lower edge of each ply of the fold 3 and may therefore be pasted down onto the seam wall 2 of the bag. The end of the plain bag wall indicated as 7 is

APPENDIX A—Continued

likewise offset from the edges of the bellows fold 3 and is pasted down on the seam wall. The lower edge of the seam wall is folded over on itself and this edge is offset from the edges 4.

It will be noted that the paste area 6, extends from a position below the edge of the turned-over portion 5 and almost to the end of the turned-over portion 7, and that the ends of both bellows folds as well as the fold 5 are pasted onto the seam wall. With this construction a thoroughly siftproof bag of the bellows type is produced.

The machine may be driven by a motor indicated diagrammatically at 44 having a transmitting shaft 46 on the end of which is a bevel gear 48 meshing with a smaller bevel gear 50 on a shaft 52 which carries suitable gears for driving the clamp cylinder 36 at the proper speed.

A stub shaft 54 also projects from the motor casing and through suitable gears drives a chain 56 whereby the cylinder 20 carrying the knives is driven once for each bag to be produced.

The machine being well known has not been described in detail but its general operation only is set forth in order that a practical manner of practicing my method may be sufficiently disclosed.

It is to be understood, however, that variations may be resorted to in the method and machinery used provided such variations are within the scope of the invention and without departing from the spirit thereof.

What I claim is:

1. The method of making a bellows fold siftproof bag which consists in perforating a continuously advancing web of paper, along transverse lines, said lines defining the ends of a section that is to constitute a bag, the transverse perforations defining the ends of each adjacent plies of bellows fold being off-set from each other and also off-set from the perforations defining the walls of a bag section to which each is adjacent, folding the web into a bellows tube, severing a section from the tube along said perforated lines, and closing the bottom of the section to complete the bag.

2. That step in the process of forming a bellows fold siftproof bag which consists in making perforations in a continuously advancing web of paper, along transverse lines which lines define one end of the plies of the bellows fold, the lines defining the end of one ply of each fold being off-set from the end of the other ply of the fold.

3. Those steps in the process of making a bellows fold siftproof bag which consists in making perforations in a web of paper along transverse lines which lines define one end of a bag wall and one end of the plies of the bellows fold, the lines defining the end of one ply of the bellows fold being offset from the other ply of the fold, the ends of both plies being off-set from said line defining the end of the bag wall.

GEORGE W. POPPE.

CERTIFICATE OF CORRECTION.

Patent No. 2,209,901. July 30, 1940.

GEORGE W. POPPE.

It is hereby certified that the above numbered patent was erroneously issued to the inventor, said "POPPE" whereas said patent should have been issued to—Equitable Paper Bag Co. Inc., of Brooklyn, New York, a corporation of New York—, as assignee of the entire interest therein, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

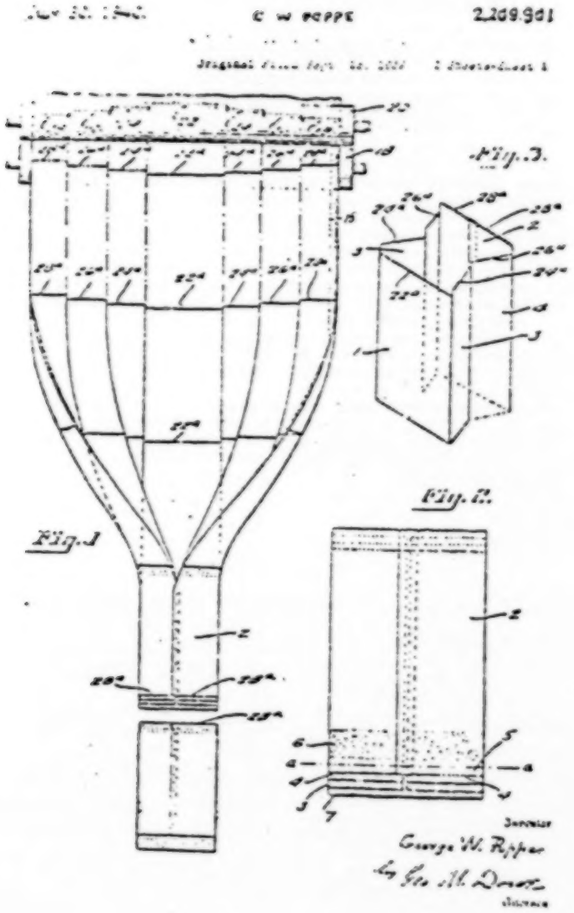
Signed and sealed this 8th day of October, A.D. 1940.

Henry Van Arsdale,
Acting Commissioner of Patents.

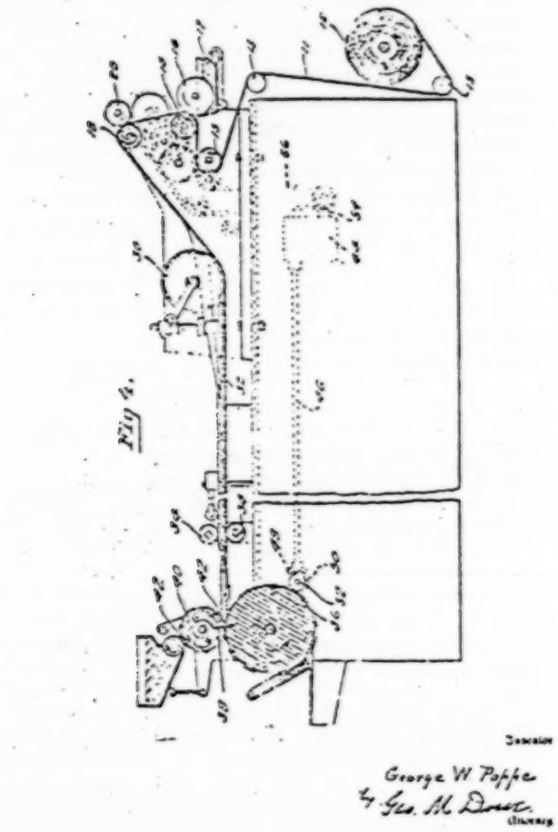
(Seal)

APPENDIX A—Continued

DEFENDANT'S EXHIBIT 29



APPENDIX A—Continued



APPENDIX B

French Patent No. 1,227,176

P.V. No. 797,824. International Classification: B 31 b

Paper bag with welded internal sheet, and manufacturing device

Company known as: Windmoeller and Hoelscher, resident of Germany

Filed June 18, 1959 at 1:57 p. m. at Paris

Issued February 29, 1960—Published August 19, 1960

(Patent application filed in German Federal Republic on May 15, 1959, in the name of the Applicant.)

The invention relates to a paper bag, preferably formed of several sheets of paper, the innermost of which is provided on its interior face with a lining of polyethylene or similar synthetic material, with the aid of which this inter-

APPENDIX B—Continued

nal sheet can be welded in order to obtain a bag that is absolutely impermeable to moisture.

One difficulty in the manufacture of such a bag resides in the embodiment of the welding of the internal sheet. For the longitudinal welding of the bag on the internal sheet, a device has already been proposed, which makes it possible in the course of the normal formation of the tube, to weld a folded-over border of the internal sheet with the other border of this same sheet, applied to the first. But when we wish to close the bottom of the bag with the tubular elements thus obtained, we are obliged to make the heat, required for the welding, pass through the other, exterior sheets of paper, which requires considerable time if we do not wish to risk burning the said exterior sheets.

The object of the invention is the elimination of these drawbacks, and the embodiment of a bag, as well as a manufacturing process for this bag, and a device for application of this process. It makes it possible to execute, quickly and surely, the welding of the bottom of the bag, with no danger to the exterior sheets, and furthermore, it makes it possible to obtain a very solid sealing of the bottom with the aid of the other sheets.

The bag according to the invention is characterized in that the internal sheet terminates, at both ends of the bag, flush with the upper and lower side, while the other sheets, on the upper side, at one end of the bag, and on the lower side at the other end of the bag, become progressively shorter than the internal sheet, going from the interior toward the exterior, at each of the corresponding opposite ends of the side of the bag.

Preferably, the sheets of paper and the welded end of the internal sheet, at the end of the bottom and/or of the head of the bag, are folded over and glued, directly below the edge of the side of the nearest interior sheet, shorter than the internal sheet, on the sides, which are likewise shorter, of the other sheets.

Furthermore, the sheets of paper and the lower part of the welded end of the internal sheet, at the end of the bottom and/or of the head of the bag, are folded over and glued along a line passing substantially through the center of the welded end of the internal sheet, on the upper part of the welded end of the internal sheet, and on the shorter side of the other sheets.

Finally, the welded end of the internal sheet, at the end of the head of the bag, is advantageously folded over in known fashion and inserted between the internal sheet and the side, shorter than the latter, of the nearest interior sheet, and the sides of the sheets, longer at this end than the internal sheet, are folded over and glued on the shorter sides.

The manufacturing process which constitutes another object of the convention, is remarkable for the fact that the tubular sections, obtained in the manner known in itself by preliminarily weakened places and longitudinal incisions of the widths formed by the various sheets of the bag, by transverse and longitudinal glue zones, application of the sheets on one another, shaping of the tube and separation on the lines of preliminary weakening, are first provided with their bottom weld by the transverse band process, then with a preliminary bottom rupture line, the bottom subsequently being glued, then folded over.

The device for application of the process, which likewise constitutes another object of the invention, is remarkable for the fact that it comprises a device for longitudinal welding, a device for pre-grooving, a gluing device and a device for folding over, which are disposed in succession along a device for conveying the material. We can advantageously provide the longitudinal welding installation in the form of a complementary station mounted in a transverse-band, base-positioning machine of known type, in which the grooving, gluing and folding stations, as well as the material conveyor device, according to the invention, are the only ones used, the other work stations of the machine being left idle.

APPENDIX B—Continued

One method of embodiment of the invention is set forth in detail by way of example in the description below, accompanied by the attached drawing in which:

Fig. 1 is a view showing a tubular section constituted by three sheets of paper and designed for the manufacture of a bag according to the invention.

Fig. 2 is a view showing the three sheets, composing the tubular section represented in fig. 1, spread out side by side.

Fig. 3 is a diagrammatic lateral view of a device designed for the obtention of tubular sections according to figs. 1 and 2.

Fig. 4 shows the successive phases of embodiment of the tubular sections in the device represented in fig. 3.

Fig. 5 is a diagrammatic lateral view of a device designed for the embodiment of the bottom seal of tubular sections according to fig. 1.

Fig. 6 shows the successive phases of embodiment of the bottom seal in the device represented in fig. 5.

Fig. 7 is a view in section, taken along line A–B, of a bag provided with its bottom seal according to fig. 6.

Fig. 8 is a view in section, similar to fig. 7, but showing another method of sealing the bottom.

Fig. 9 is a view in section, similar to fig. 7, but showing the terminated seal at the head of a full bag.

The tubular section represented in fig. 1 is composed of three sheets 1, 2 and 3 (see also fig. 2). Sheet 1 is the innermost sheet and it is equipped on the face visible in fig. 2, constituting the interior of the bag, with a lining 4 of synthetic material such as, for example, polyethylene or similar material. The internal sheet 1 has straight-cut ends 5 and 6 and, with the aid of fold lines 7 and 8, which will later form the lateral borders of the tube, is folded to form a tube and closed with the aid of a longitudinal weld 9 (fig. 1) executed in any manner known in itself by welding the lining made of synthetic material and/or by gluing the paper surfaces. The middle part 10 of the sheet 1, situated between the fold lines 7 and 8 (fig. 2) here forms the under part of the tube, and the lateral parts 11 and 12, outside the fold lines 7 and 8, form the upper part of the tube, on which the longitudinal weld 9 is disposed.

The next interior sheet 2, which is constituted, for example, by kraft paper, has, at its ends, borders cut in steps 13, 14 and 15 on the one hand, and 16, 17 and 18 on the other hand, whose shoulders respectively 19 and 20, and 21 and 22, correspond to the future lateral fold lines 7′ and 8′, so that the under part 23 of the tube, situated between fold lines 7′ and 8′, forms, with its lower end, a step 17 which projects from the internal sheet 1, past its lower edge 6, and lateral parts 24 and 25 which form the upper part of the tube, and which are situated on the outside of the fold lines 7′ and 8′, have lower edges lying with the lower edge 6 of the internal sheet 1, as we can see in fig. 1. The steps 13, 14 and 15 at the upper end of sheet 2, are exactly identical to steps 16, 17 and 18 provided on its lower end, and they are likewise disposed with the same equal distance between them as upper end 5 is from the

APPENDIX B—Continued

lower end 6 of internal sheet 1, so that at the upper end of the tube, layer 2, with its upper edge 14, presents a recess, equivalent, within the upper 5 of sheet 1, to the projection which step 17 forms beyond edge 6. Likewise, the upper steps 13 and 15 of the upper side of the tube, project beyond the upper edge 5 of the sheet 1 by an amount equal to the recess presented by the lower steps 16 and 8 within the lower edge 6 of sheet 1. Sheet 2 of the tube is closed with the aid of a longitudinal weld 26 (see fig. 1).

With respect to the exterior sheet 3, the same disposition is repeated, with the difference that the underpart 27 with its lower edge 28, again forms, beyond lower step 17 of sheet 2, a projection equivalent to the projection which step 17 forms relative to the lower edge 6 of sheet 1. Inversely, the upper part of exterior sheet 3, formed by the lateral parts 29 and 30, presents, with its edges 31 and 32, an equivalent recess within the lower steps 16 and 18 of sheet 2. Consequently, at the upper end of the tube, the upper part of the tube constituted by lateral parts 29 and 30, forms, with its edges 33 and 34, beyond the upper steps 13 and 15 of the sheet 2, a projection equivalent to the recess presented by the upper edge 35 of underpart 27 of the tube relative to the upper step 14 of the under part of sheet 2. The exterior sheet 3 is closed with the aid of a longitudinal weld 36. The shoulders of the edges coincide, again, with the lateral fold lines 7" and 8".

By means of the cut, as just described, given to the exterior sheets 2 and 3, we obtain the arrangement such that the internal sheet 1 remains apparent, presenting a strip 37, 38 respectively (fig. 1) with the same width as the spaced steps, so that we can weld the inner lining 4 to the interior of this strip, and the heat can now be added from the side remaining open, and only through internal sheet 1. When the interior bag has thus been sealed absolutely tight, we impart mechanical strength to the bag by folding and gluing the sheets of the bag, an operation which, according to the invention, can be carried out in two different ways:

According to the first process, the folding edge of the bottom is provided immediately below steps 16 and 18 of the middle sheet 2. Fig. 7 shows, in section, a bottom seal produced in this way. The internal sheet is closed by a weld 39 and the lower part thus closed is folded around steps 16 and 18 of intermediate sheet 2, and glued to the latter with the aid of glue zone 40. The still projecting parts 2 and 3 are glued, with the aid of glue zones 41 and 42, to the recessed part of exterior sheet 3.

According to another process according to the invention, the fold line 43 of the bottom (see fig. 8) is provided in the middle of the welded strip 37 of the tube formed by sheet 1, and strip 37, thus doubled, is glued to itself with the aid of a glue zone 44. If we simultaneously fold the projecting borders of sheets 2 and 3, each of these borders will be placed, each time, on the top border of the same sheet, so that with the aid of glue zones 45 and 46, the sheets are glued to themselves, imparting remarkable solidity to the bottom of the bag.

The sealing of the head of the filled bag, whereof the disposition of the sheets before filling is represented at the top in fig. 7, can be executed, generally speaking, in the same way as the sealing of the bottom, but, in view of prevalent custom, we operate as shown in fig. 9, in a way which differs in that the welded strip 38 of internal sheet 1 is inserted between this sheet and the next intermediate sheet. The projecting borders of sheets 2 and 3 are provided with glue zones 47 and 48 are glued on the

APPENDIX B—Continued

opposite side of the bag, the intermediate sheet 2 being glued both to itself and to sheet 3.

The various sheets are protected against a shift in the longitudinal direction with the aid of transverse glue zones applied to the ends of the bag, which also insures the correct opening of the bag; thus we apply, to the interior face of sheet 2, in the vicinity of the bottom of the bag, glue zones 49 and 50 (ss fig. 2, 7, and 8), with the aid of which the intermediate sheet 2 finds itself glued to the internal sheet 1. On the interior face of exterior sheet 3, glue zones 51 and 52 are applied in the vicinity of the bottom of the bag, and with the aid of these, the exterior sheet 3 is glued to the intermediate sheet 2. At the head end of the bag, exterior sheet 3 is provided, on its interior face, with glue zones 53 and 54 (see fig. 2, 7 and 9), with the aid of which it is glued to the intermediate sheet 2. The interior sheet 2 is provided, for the embodiment of the seal of the head of the bag, according to fig. 9, only with transverse glue zones 55 applied to the upper part of the bag, and with the aid of which this sheet is glued to internal sheet 1. The internal side of the bag has been left free of glue zones, in order to be able to insert the welded border of internal sheet 1 between sheet 1 and sheet 2. If we terminate the sealing of the head of the bag in a manner similar to that represented in fig. 7 and 8, the sheet 2 can likewise be provided at its upper end with a continuous transverse glue zone.

The number of sheets composing the bag is not limited to three. If we use more sheets we will advantageously provide other steps, or we will make up a sheet 2 or a sheet 3 actually formed of several sheets.

In the manufacture of bags according to the invention, we start by embodying the tubular sections according to fig. 1 with the aid of a machine suitable for the formation of tubes. By starting, for example, with three feed spools 56, 57 and 58, designed respectively for the embodiment of widths 1', 2' and 3', we will draw these widths with the aid of an advancing device 59, 60 and we will first make them pass over perforator devices 61, 62 and 63. The perforator device 61 is provided, for the obtention of a continuous line of less resistance 64 (fig. 4) in the upper width 1', with a continuous serrator 65. The perforator device 62 has three serrators 66, 67 and 68, disposed in two different planes, and designed to obtain, in the middle width 2', a line of less resistance comprising steps 69, 70 and 71. In the same way, perforator device 63 is provided with three serrators 72, 73 and 74, disposed in two planes, the spacing of which is more pronounced, and is designed to obtain, in the lower width 3', a line of less resistance forming more marked steps 75, 76 and 77.

In addition, the perforator devices 62 and 63 have, between the ends of the serrators, longitudinal knives 78 and 79 respectively, designed to embody longitudinal connecting slots 80 and 81 in width 2', and 82 and 83 in width 3' between the lines of less resistance of the steps.

As they leave the perforator devices, the widths 2' and 3' are passed, respectively, in a transverse gluing device 84 and 85 for the application of gluing strips 49 to 55, according to fig. 5, on both sides of the lines of less resistance of the steps, which correspond exactly to the contours of the end of the steps in sheets 2 and 3.

With the aid of guide rollers 89, 90 and 91, we will ensure that the lines of weakening which succeed one another in the various widths, at an interval corresponding to the length which we wish to impart to the bag, will be superposed correctly with the interval provided for

APPENDIX B—Continued

the steps. In addition, the widths which, to the left in fig. 4 have been represented separately, one above the other, only for the sake of simplicity, are guided, offset laterally relative to one another, from the feed rolls, likewise offset mutually, to the collecting station, so that they arrive, as shown by the middle of fig. 4, with their lateral borders offset, so that the longitudinal gluing lines 9, 26 and 36, can be executed underneath in device 92 on the offset borders.

Then, with the aid of a tube shaping device 93, the tube is shaped by bringing the lateral parts of the assembled widths over one another and gluing the longitudinal gluing strips to the opposite and offset borders of the widths, in the course of which operation we proceed, where the case applies to the hot gluing of the lining of width 1' made of synthetic material.

Behind the advancement device 59–60 there is disposed a pair of breaking cylinders 94–95, rotating at high speed, which separate in turn each tubular section 96 along the lines of less resistance in the tube which is continuously being fed out, and which is held by the advancement device 59–60. The tubular sections are then stacked in a collector 97.

For the embodiment of the bottom seal, the tubular sections 96 (see fig. 6) are separated mechanically in any manner known in itself, for example with the aid of clips 100 and 101 mounted on two chains 98 and 99, first directed toward a welding device 102 (see fig. 5), where the weld 39 is embodied on the projecting end 37 of the internal tube 1. The welding device preferably consists of a resistance 103, in a thin strip disposed in the direction of movement and whereof the two ends, which are insulated and fixed, are provided with current feeds 104 and 105. The resistance strip, whose length can be determined as desired according to the necessary amount of heat to be applied, is, in view of its small mass, easy to adjust to the temperature which will insure a uniform weld.

As they leave the welding device, the tubular sections pass into a press device 106–107 in which the lining of synthetic material, having become adhesive, is glued by means of a suitable clamping pressure, to the interior of the two internal tubular sides. We can then provide, where applicable, a cooling device 108 designed to impart the necessary rigidity to the glue zone by cooling, so that in the course of the subsequent phases of operation, the weld will not open up, or so that the two sheets, during the folding, will not shift accidentally. Then comes a longitudinal grooving device 109, 110 in which a preliminary fold line 111 is made for the bottom seal. By lateral adjustment of the members 109 and 110, line 111 can be provided either as represented in the drawings, on steps 16 and 18 of the recessed upper tubular side, of the intermediate sheet, or in the middle of the welding strip 37.

Then there is a gluing device 112, designed to embody the gluing zones 40, 41 and 42 on the borders of the sheets to be folded over.

Finally, the tubuler sections pass into a folding device 113 in which the sealing of the bottom is produced, as shown by fig. 6, along the fold line 111.

In a manner not shown, the tubular sections can then be taken, between conveyor belts exerting a certain pressure on them in order to complete the gluing of the bottom, toward the storage point.

It is likewise possible to use, as bottom shaping apparatus, a bottom shaping machine with transverse advance, of

APPENDIX B—Continued

known type, to which we add, ahead of the grooving station, a longitudinal welding device such as the one represented, for example, in fig. 5. The unwanted working stations on such a machine are left in idle position, and only the grooving, gluing and folding devices are actuated.

Resume

The object of the invention is:

1) A paper bag, formed of several sheets, with weldable internal sheet, having the following characteristics, considered separately or in combination:

The internal sheet terminates, at the two ends of the bag, flush with the upper and lower side, while the other sheets, above one end of the bag and below the other end of the bag, become progressively shorter than the internal sheet, going from the interior to the exterior, but the said sheets become progressively longer than the internal sheet, going from the interior to the exterior, at each of the corresponding opposite ends.

The sheets of paper and the welded end of the internal sheet, at the end of the bottom and/or of the head of the bag, are folded over directly below the edge of the side of the nearest interior sheet which is shorter than the internal sheet, and glued on the, likewise shorter, side of the other sheets.

The sheets of paper and the lower part of the welded end of the internal sheet, at the end of the bottom and/or of the head of the bag, are folded over along a line passing substantially through the middle of the welded end of the internal sheet on the upper part of the welded end of the internal sheet, and glued on the shorter sides of the other sheets.

The welded end of the internal sheet, at the head end of the bag, is folded over on itself in known manner, and inserted between the internal sheet and the side, shorter than the latter, of the nearest interior sheet and the sides of the other sheets, longer at this end than the internal sheet, are folded over and glued on the shorter sides of these same sheets.

2) A process for the manufacture of a bag with multiple walls, according to one of the subsections of paragraph 1), characterized in that the tubular sections obtained in the known manner, by the preliminary formation of lines of less resistance, and longitudinal incisions in the widths of the various sheets of the bag; by transverse and longitudinal gluing, by application of the sheets one on top of the other, shaping of the tube and separation on the lines of less resistance, are by transverse displacement, first provided with their bottom weld, then with a preliminary breakoff line, the sealing of the bottom then being embodied with the aid of gluing zones, then a folding over.

A device for application of the said process, consisting of a machine to shape tubular bag components and a machine with transverse advancement to close the bottom of the bag, the latter machine having the following characteristics, considered separately or in combination:

It consists, successively, of a longitudinal welding device, a pre-grooving device, a gluing device and a foldover device.

The longitudinal welding device constitutes a complementary station on a machine with transverse advancement, for placement of bases, of known type, whereof only the grooving, gluing and foldover stations as well as the conveyor device are used to apply the invention, the other work stations of the machine will remain unused.

APPENDIX B—Continued

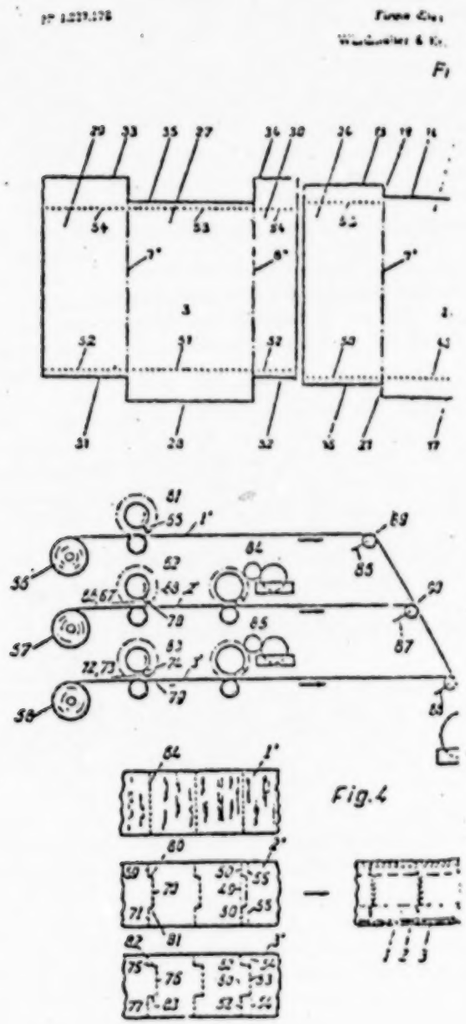


Fig. 4

APPENDIX B—Continued

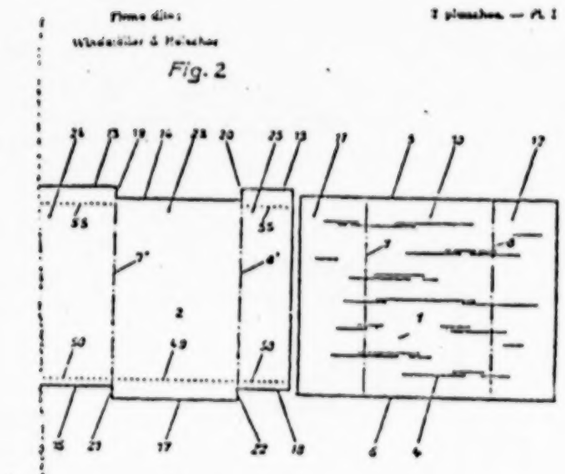


Fig. 2

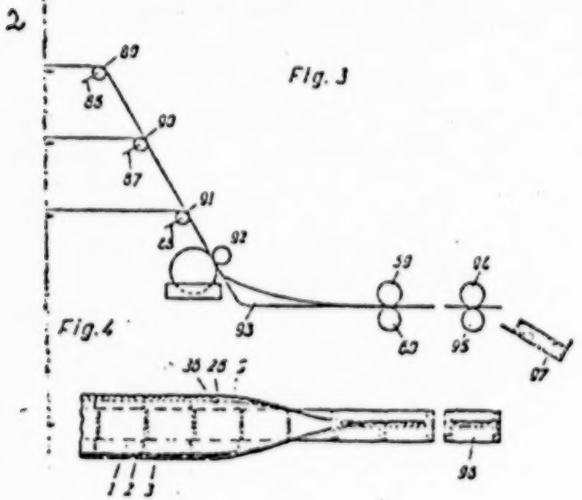


Fig. 3

Fig. 4

APPENDIX B—Continued

Fig. 5

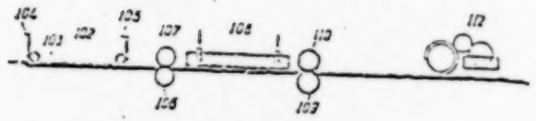


Fig. 6

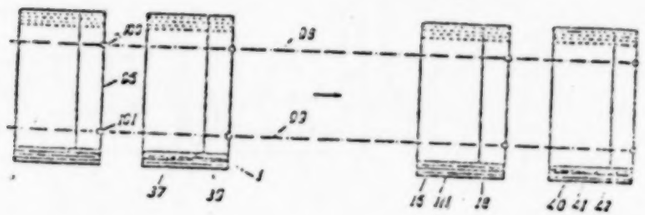


Fig. 7

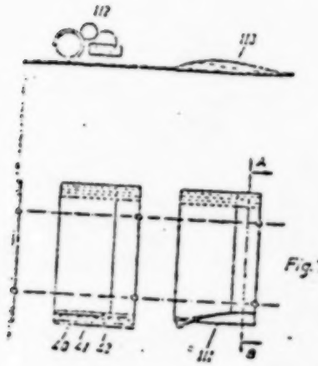


Fig. 1

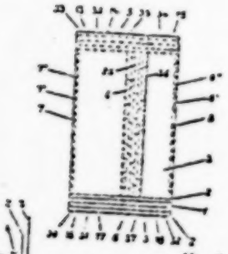


Fig. 9

Fig. 8

Page Numbers

21 - 29 Omitted

ST. REGIS PAPER COMPANY, Plaintiff,
v.
BEMIS COMPANY, INC., Defendant.
No. P-CIV-73-31.

United States District Court, S. D. Illinois, N. D.
Nov. 12, 1975.

In an action for patent infringement, the District Court, Robert D. Morgan, Chief Judge, held that a patent and two reissue patents, each relating to a paper bag type, designated by the trade as a gusseted, multiwall, pinch bottom, openmouth bag were valid and infringed. Various defenses were found untenable.

Judgment for plaintiff.

1. Patents ⇐112.1

Presumption of validity of issued patent is strengthened when principal prior art relied upon to prove invalidity has been considered and rejected by patent examiner, and presumption can be overcome only by clear and convincing proof of invalidity and cannot be overcome if prior art upon which reliance is placed is less pertinent or has no greater pertinency than art which examiner rejected in his allowance of patent in suit. 35 U.S.C.A. § 282.

2. Patents ⇐112.3(4)

Patent office examiner's determination that claims were patentable over prior art references was expert appraisal to be honored by court in absence of persuasive evidence that examiner's decision was wrong. 35 U.S.C.A. § 282.

3. Patents ⇐36.2(1)

Commercial success buttressed patent office examiner's determination that what was claimed was not obvious. 35 U.S.C.A. § 103.

4. Patents ⇐118.21

To sustain defense, in action of infringement, that misrepresentations were made in Patent Office to obtain allowance of patent, defendant had burden of proving that representations upon which it relied were false and were made fraudulently and with deceptive intent.

5. Patents ⇐126

A court is empowered by statute to direct correction of inventorship in proper case. 35 U.S.C.A. § 256.

6. Patents ⇐136

Reissue for correction of patent "claims" is not limited solely to claims of invention, but encompasses as well claims of rights and priority to which patentee would have been entitled had there not been inadvertent omission in his original application. 35 U.S.C.A. §§ 119, 251.

7. Patents ⇐134

Patent reissue statute is "remedial in intention" and must be construed liberally. 35 U.S.C.A. §§ 119, 251.

8. Patents ⇐136

Where plaintiff with sole inventorship would have been entitled to retain "continuation-in-part" reference and priority of 1962 filing date of application, Patent Office correctly applied reissue statute to permit reissue under the circumstances. 35 U.S.C.A. §§ 119, 251.

9. Patents ⇐120

It was to be presumed that patent office examiner resolved any question of double patenting when he allowed divisional application, absent clear and convincing proof to overcome that presumption. 35 U.S.C.A. § 121.

10. Patents ⇐118.20

When read in context of total structure described in patent, claims relating to paper bag type, designated by trade as gusseted, multiwall, pinch bottom, openmouth bag, were sufficiently definite to comply with statutory requirements. 35 U.S.C.A. § 112.

11. Patents ⇐148

Where each reissue patent was identical to its original counterpart with exception that one man was named as sole inventor in each reissue patent and each reissue patent was cross-referenced as continuation in part of an earlier application, each reissue patent had as effective date the filing date of the earlier application as to all common subject matter and plaintiff occupied same position as if the continuation in part references had never been deleted from original applications. 35 U.S.C.A. §§ 102(b), 120, 252.

12. Patents ⇐138(2), 148

Effect of reissue was to accord two patents an effective filing date which antedated publication of French patent and thus to negate that patent as potential defense against patents in suit, even if otherwise it would have rendered them invalid. 35 U.S.C.A. §§ 102(b), 120, 252.

13. Patents ⇐283(1)

Plaintiff was not estopped from relying upon original filing date by reason of allegedly inconsistent positions taken before the court and before the Patent Office where plaintiff's original brief stated only that such patent did not disclose totality of inventive combination claimed in original patents and plaintiff's claims in Patent Office, with reference to disclosure of original application, merely stated its position that prior application contained generic disclosures which embraced subject matter of subsequent patents, although latter also disclosed and claimed patentable improvements.

14. Patents ⇐118.21

Misrepresentations which will bar validity of patent must be proved by clear and cogent evidence, and defendant had burden of proving that plaintiff was possessed of knowledge of facts and did intentionally misrepresent or conceal such facts from Patent Office.

15. Patents ⇐118.21

Evidence in action for patent infringement failed to establish any fraudulent concealment by plaintiff or that patent examiner was fraudulently misled during prosecution of either original or reissue applications.

16. Patents ⇐144

Action of Patent Office in granting reissue applications was subject to review but was also clothed with same presumption of regularity as any other of its actions. 35 U.S.C.A. § 252.

17. Patents ⇐138(2)

Statute providing that person may continue his use of an inventive concept claimed in reissue patent, such use having commenced prior to reissue, unless making, using or selling of such thing infringes valid claim of reissued patent which was in original patent merely codified equitable principles devolved under prior law. 35 U.S.C.A. § 252.

18. Patents ⇐138(2)

It was immaterial that, but for reissue, claims of original patents might have been shown to be anticipated by French patent and, thus, invalid; where only result of granting reissue patents was to negate apparent state of facts which might have presented viable defense, no intervening right arose in the premises. 35 U.S.C.A. § 252.

19. Monopolies ⇐21.2(1)

To invoke doctrine of patent misuse, challenger must establish that patentee used patent in attempt to monopolize sale of unpatented goods or to gain some market or other advantage to which he was not entitled by virtue of his patent monopoly.

20. Patents ⇐328(2, 4)

Patent No. 3,650,460 and reissue patent Nos. Re 28,317 and Re 28,318 were valid and infringed. 35 U.S.C.A. §§ 284, 285.

Raymond J. McElhannon, Clyde H. Haynes, New York City, Charles V. O'Hern, Jr., Peoria, Ill., for plaintiff.

Davis, Morgan & Witherell, Peoria, Ill., Irving Powers, St. Louis, Mo., for defendant.

DECISION AND ORDER

ROBERT D. MORGAN, Chief Judge.

This cause arises upon a complaint, under the patent laws of the United States, 35 U.S.C. § 1 et seq., alleging patent infringement. The court has jurisdiction of the parties and of the subject matter under the provisions of 35 U.S.C. § 281 and 28 U.S.C. §§ 1331, 1332, 1338(a), 1391(c), 1400(b).

Plaintiff, a New York corporation, has its principal place of business in the city of New York. Defendant, a Missouri corporation, has a regularly established placed of business in Peoria, Illinois, within this judicial district. Both parties are manufacturers of paper and paper products, including multiwall bags of various types.

The complaint, as amended, is grounded upon three patents which are owned by the plaintiff: Lokey Patent No. 3,650,460, hereinafter Lokey, issued March 12, 1972, and Goodrich Reissue Patents numbered RE28,317 and RE 28,318, both issued January 28, 1975. These latter patents are hereinafter referred to, respectively, as the RE317 and RE318 patents.

Historic Perspective of Present Status

The application, which ultimately ripened into the Lokey patent, was filed in the Patent Office on August 13, 1962. Co-pending with the Lokey application were an application of John J. Goodrich, numbered 169,287, filed January 29, 1962, and an application of one Harmsen, both asserting similar claims of invention. The examiner declared an interference between the three competing applications, as a result of which priority of invention was awarded to Lokey, and the Lokey patent was issued. The Goodrich and Harmsen applications were rejected.

In the meantime, a monologue of the Goodrich application was filed in France, and the same ripened into French Patent No. 1,345,471 which is owned by the plaintiff.

On June 28, 1965, an application by Mr. Goodrich and Chester E. Waxlax was filed in the Patent Office, which ultimately ripened into a patent to Goodrich and Waxlax, 3,687,356, hereinafter the 356 patent, issued August 29, 1972, and a second patent to the same, numbered 3,776,451, hereinafter the 451 patent, issued December 4, 1973. The application as originally filed contained a cross-reference stating that it was "a continuation in part" of the Goodrich 287 application. As the result of the Examiner's requirement that an election of species be made, the embodiment of figure 14 of the drawings was elected, which ultimately ripened into the 356 patent. A divisional application was then filed which ripened into the 451 patent. As a basis for allowance of those patents, the Examiner required that the cross-reference to the 287 application be deleted by amendment of the applications. That requirement rested upon his ruling that a joint application could not derive as a continuation in part from a previous sole application by one of the joint inventors. The reference was deleted in each instance.

Plaintiff's French Patent 471 was not cited as a prior art reference to the Goodrich-Waxlax application.

The original complaint herein alleged infringement of Lokey and the 356 and 451 patents.

Following extensive pre-trial discovery, preliminary proceedings, and pre-trial conferences, the cause was scheduled for a trial, upon the issues of validity and infringement of the three patents, to commence on February 11, 1974. In the course and context of such pre-trial proceedings, the defendant asserted plaintiff's 471 French patent as a prior art reference against both the 356 and 451 patents.

On the eve of trial in late January, the plaintiff filed a motion under 35 U.S.C. § 256, praying an order directing the Commissioner of Patents to correct the 356 and 451 patents by the deletion of Mr. Waxlax as a joint inventor from

each patent and the addition therein of a "continuation in part" reference to the Goodrich 287 application. That motion was denied on February 1, 1974. It was thereafter renewed and again denied at the outset of the trial.

At the close of the trial, the parties were directed by the court to submit proposed findings of fact and conclusions of law and their post-trial briefs. Such documents were filed during a period extending into the month of July, at which time the cause was taken under advisement by the court. In August 1974, plaintiff advised the court and opposing counsel, by letter, that it had filed an application in the Patent Office for reissue of the 356 and 451 patents, which said applications sought the deletion of Mr. Waxlax as a joint inventor and the restoration of the "continuation in part" reference to the Goodrich 287 application.

Prior to a decision, it became apparent that the patents would be reissued, and that the 356 and 451 patents would be superseded by reissue patents. A conference was then directed by the court, at which the plaintiff was granted leave to substitute those reissue patents when the same became available for the 356 and 451 patents. The parties were authorized to supplement the record pursuant to the demands of that changed situation and directed to submit revised findings and conclusions and such supplemental briefing as the premises were deemed to require.

The claims of each RE317 and RE318 patent are identical to those of the superseded 451 and 356 patents, respectively. The reissue patents differ from the original patents only in showing Goodrich, alone, as the inventor, and in reciting that the patents are issued upon an application which is a continuation in part of the 1962 Goodrich 287 application.

It seems apparent that both the Section 256 motion before this court and the subsequent reissue applications sprang from plaintiff's belated realization that its own French 471 patent might be a prior art reference against both the 356 and 451 patents, and that the same had not been cited during processing of the Goodrich-Waxlax applications. It is equally apparent that both the motion and reissue applications were designed to recapture the "continuation-in-part" cross reference to the Goodrich 287 application and an effective filing date of January 29, 1962, for the applications as thus revised.

The cause, in present posture, is grounded on Lokey, RE317 and RE318.

The Patents in Suit

Each patent relates to a paper bag-type, which is designated by the trade as a gusseted, multiwall, pinch-bottom, open-mouth bag.

Lokey relates to a bag of that type comprised of several contiguous plies of flexible material, such as paper, in tubular form, with, at its open end, a front wall, and a rear wall portion which is designed, in closing the bag, to overlap the front wall. The bag is longitudinally and reversely creased along diametrically opposed portions to provide a pair of gussets between the front and rear walls. Each of those gussets has a front wall which is cut above, or stepped up from, the plane of the front wall, and a rear portion which is stepped upward above the front portion thereof. The rear bag wall is, in turn, stepped upward above the rear gusset portions. The exposed overlap portion of the rear wall and of the gussets are coated with an adhesive for sealing such portions against the front wall after the bag has been filled with a bulk commodity. The construction of the closed bag end is complementary to that of the open end, and the same is folded over and sealed against the rear wall as a part of the process of manufacture of the bag.[1]

1. Claim 2, the broadest claim of Lokey, recites:

"2. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled

Patent RE317 combines with the Lokey end construction the further feature that at least some of the several bag plies are stepped upward relative to each other in the front and rear walls of the bag ends.[2] The patent RE318 claims add to the Lokey RE317 composite structure the further features that the several bag plies also stepped upward, the one above the other, in the gusset portions of the bag.[3]

condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to other in overlapped relation, and said end of the tube including all of said overlapped portions and surfaces being folded against said front surface and selectively adhered in position to form said assembled bag end."

A more specific definition is contained in Claim 3, as follows: "3. A gusseted multiwall bag formed from a continuous tube of plies of flexible sheet material, comprising: a tubular body composed of a plurality of said plies, the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation, said tubular body being reversely creased along diametrically opposed portions to provide front and rear walls and a pair of gussets interposed therebetween on opposite sides of the axis of said tubular body, respectively, a first end structure including for each said gusset, said front wall, a first gusset wall longitudinally connected to said front wall along a first longitudinal edge, a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and said rear wall longitudinally connected to said second gusset wall along a third longitudinal edge, all of the plies in the front wall being cut perpendicularly to and along the first longitudinal edge of each gusset to expose the upper portion of the first gusset wall thereof and form a first step, all of the plies in the first gusset wall of each gusset being cut perpendicularly to and along the second longitudinal edge to expose the upper portion of the second gusset wall thereof and form a second step, all of the plies in the second gusset wall of each gusset being cut perpendicularly to and along the third longitudinal edge to expose the upper portion of the rear wall and form a third step, and said adherently bonded and overlapped longitudinal edges of said plies being disposed between said pair of oppositely disposed gussets, said end structure including all of said exposed upper portions being folded against said front wall and adhesively secured thereto, and a second end structure similar to the reverse of the first end structure."

2. The broadest claim, Claim 1, is in the following language: "1. A bag of tubular form comprising a plurality of at least three contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having an exposed front portion and an exposed rear portion which is stepped above said front portion and adapted to overlap said front portion within the overlapped area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, at least some of the bag plies being stepped in said front and rear surface portions to provide exposed portions thereof, a heat reactive bonding agent in a dormant state substantially covering said exposed gusset portions and front and rear surface portions at said end of the tube when said bag is in its assembled condition, and said bonding agent being reactivatable to close said bag end, the opposite end of said tube being folded over and adhered to a surface of said tube by means of said bonding agent."

3. The broadest claim, Claim 1, is in the following language: "1. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front surface within the

The object of the several patents is best defined with relation to the problems sought thereby to be solved. Bag types in use prior to the Lokey concept were susceptible of excessive sifting of dry contents therefrom, the introduction of moisture thereinto, and insect penetration through the sealed portions at either end of the bag. Lokey was designed to achieve a high-strength end-closure construction, having greatly superior sift-proof properties and moisture and insect penetration resistance. The evidence is compatible only with the finding that the invention claimed in Lokey did substantially achieve that object. The structures claimed in RE317 and RE318 do achieve sift, moisture and inset-proof qualities which are substantially enhanced over those bags of the Lokey construction.

Plaintiff alleges that defendant has infringed the claims of each of those patents. Defendant denies infringement in each instance. It further defends upon its contention that each patent is invalid for divers reasons as hereinafter noted and discussed.

Infringement

Certain stipulations of the parties must be construed as an admission by the defendant that it has been manufacturing and marketing bags within this judicial district, which are embraced by the context of Lokey claims 1, 2, 4 and 5. Plaintiff's expert witness testified that bags manufactured by defendant, as exemplified by plaintiff's exhibits 1, 2, 4, 6, 8–10, inclusive, 13–19, inclusive, and 22, do infringe each of claims 1, 2, 4 and 5 of Lokey. That testimony stands not only undisputed, but, also, corroborated by a comparison of those several exhibits with the Lokey claims.

Consideration of the relevant evidence requires the finding that defendant's bags, as exemplified by plaintiff's exhibits 4, 6, 10 and 17, do infringe claim 1 of RE318, and that certain among said exemplifications show infringement of one or more of the more restrictive claims 2, 3 and 4 of the patent.

The court also finds that defendant's bags, as exemplied by plaintiff's exhibits 1, 2, 4, 6, 8–10, 13–19, and 22, do embody the inventive concept of claim 1 of RE317, and that certain among such exhibits would also infringe the more restrictive claims 2, 3 and 4 thereof.

Defendant urges that infringement of RE317 (formerly the 451 patent) cannot be found, inasmuch as that patent did not issue until December 4, 1973, and the exhibit evidence reflects production runs by defendant prior to the issuance of that patent. It is axiomatic that a patent cannot be infringed until the same has issued, and that no damages can therefore accrue. That fact does not preclude the present determination that certain exemplified structures do embody the teachings of the claims, or the conclusion that the plaintiff is entitled to redress, by accounting or otherwise, for infringing units manufactured subsequent to the issue date of the patent. That is a matter which may be resolved when and if this suit reaches an accounting stage.

The testimony of defendant's patent expert, that none of the accused bags infringes patent 451 (now RE317) because none have adhesive substantially covering the front surfaces of the ends, must be viewed as a semantic perversion of the language of the patent claims. Such credit, to which his opinion might otherwise be entitled, is diluted by testimony of defendant's technical expert witnesses that certain of the exemplified bags do embody every element of generic claim 1 of the patent.

overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progressively and successively one beyond another at each surface portion and each gusset portion of said bag end, and a bonding agent in a dormant state being applied on each surface portion and each gusset portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation."

If valid, the court finds that the several patents are infringed in manner and extent as above delineated.

Validity

[1] Validity of each patent in suit must be judged by the particular circumstances surrounding its issuance, but basic cardinal principles, which seem hardly necessary to restate, do apply to all. Foremost among such principles is the presumption created by 35 U.S.C. § 282 that an issued patent is valid, and the corollary principle that that presumption is strengthened when the principal prior art relied upon to prove invalidity has been considered and rejected by the Patent Examiner. *E. g., Reese v. Elkhart Welding & Boiler Works, Inc.*, 447 F.2d 517 (7th Cir. 1971). The presumption cannot be overcome if the prior art upon which reliance is placed is less pertinent or has no greater pertinency than the art which the Examiner rejected in his allowance of the patent in suit. *LaSalle Street Press, Inc. v. McCormick & Henderson, Inc.*, 445 F.2d 84 (7th Cir. 1971); *Uarco, Inc. v. Moore Business Forms, Inc.*, 440 F.2d 580 (7th Cir. 1971), *cert. dismissed*, 404 U.S. 873, 92 S.Ct. 91, 30 L.Ed.2d 117. Finally, each patent in suit is governed by the cardinal principle that a party asserting invalidity can overcome the statutory presumption only by clear and convincing proof of invalidity. *E. g., Mercantile National Bank of Chicago v. Quest, Inc.*, 431 F.2d 261 (7th Cir. 1970), *cert. denied*, 401 U.S. 956, 91 S.Ct. 977, 28 L.Ed.2d 239. Though it be necessary to consider defendant's contentions as against each of these patents separately, those basic principles implicitly guide the ultimate decision in each instance.

Validity of Lokey

Against Lokey, defendant asserts two defenses: first, that the subject of claimed invention would have been obvious to persons skilled in the art when the claimed invention was made within the meaning and intendment of 35 U.S.C. § 103; and, second, that Lokey is invalid because of misrepresentations made in the Patent Office related to the prior art.

In support of its Section 103 defense, defendant relies upon seven patents, including patents to Single, Poppe & Schenke,[4] which, it argues, make the Lokey concept obvious.

Digressing, historically, when the interference was declared, the Examiner directed Mr. Lokey to amend his application by copying thereinto claim 11 of the Goodrich application, and directed Mr. Goodrich to amend in like fashion by copying into his application claim 8 of the Lokey application. Those claims, revised in accordance with the Examiner's direction, were then allowed and the same became counts 1 and 2 of the interference. Ultimately, those claims were allowed as claims 1 and 2 of Lokey.

During the course of that interference, the party Lokey moved to dissolve Count 1 thereof as unpatentable over the prior art, specifically the prior art patent to Poppe. The party Goodrich opposed that motion. In rejecting the Lokey contention for dismissal, the Primary Examiner said, as to Count 1:

> "* * * the multiwall feature recited in Count 1 is patentable over Poppe since the Multiwall feature is the crux of the common invention at issue and is not shown in any of the references."

The Examiner also observed that Poppe was cumulative only, adding nothing to the disclosure of the patent to Single which had been considered by the Examiner in setting up the interference.

In rejecting the motion to dissolve Count 2, on the ground that the subject matter was unpatentable over Schenck,

4. J. Single 426,607
H. Haskell 1,983,291
G. W. Poppe 2,269,901
T. M. Avery 2,312,280
E. D. Abramson 2,316,383
A. E. Schenck 2,582,286
St. Regis, French 650,925

the Primary Examiner said, in part: "The gussets in the Schenck patent do not have a front portion and a stepped rear portion as called for in Count 2."

Further, referring to an affidavit by one Woronoff, related to comparative tests conducted with bags constructed pursuant to Schenck and bags constructed under the Lokey concept, he said:

> "[Bags constructed per Schenck] were completely unsatisfactory due to the fact that the two steps did not provide adequate sealing surface, whereas the three steps in the Lokey bag * * *, are adapted to the application of enough positive pressure to tightly seal the end closure to prevent sifting because the flaps of the back and each side of the gusset are sufficiently bonded to the front in closure to prevent their loosening by vibration."

[2] The Examiner determined that the Lokey claims were patentable over the Poppe, Single, Haskel and Schenck prior art references. That expert appraisal must be honored by the court in the absence of persuasive evidence that the Examiner's decision was wrong. *E. g., Hazeltine Research, Inc. v. Avco Mfg. Corp.*, 227 F.2d 137, 146 (7th Cir. 1955), *cert. denied*, 350 U.S. 987, 76 S.Ct. 474, 100 L.Ed. 854. Other references upon which defendant here relies are not only no more pertinent than are Poppe, etc., but defendant's own technical experts admitted in their testimony that bags made pursuant to such prior art patents were inoperative to achieve a sift-proof seal.

Perhaps this issue does epitomize the reason for recognition of the patent examiner's expertise, and the necessity for avoidance of the use of hindsight to determine what was or was not obvious. Defendant's references do create an impression of superficial obviousness which might persuade the uninitiated person to conclude that Lokey achieved nothing of patentable stature. Yet the Examiner looked past and through that superficiality and recognized that Lokey did embody an inventive concept which achieved a result for which practitioners in the art had theretofore striven in vain.

[3] There is in the record no dispute that prior to 1962 the bag industry was substantially foreclosed from the market related to containers for various commodities. That was true because the industry had devised no workable means to securely seal the bag ends to avoid the sifting of their contents therefrom. Practice of teachings of the prior art references failed to achieve the desired result. It is clear that Lokey provided the answer to that long felt need, and that his concept met with substantial commercial success. In 1962, the market for gusseted, multiwall, open-mouth bags was limited. Beginning in 1962, with the advent of the Lokey concept, that market achieved substantial increase. Sales of such bags in 1972 by the industry totaled approximately 110 million bags. That overall picture buttresses the Examiner's determination that what Lokey claimed was not obvious. *E. g., Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); *Illinois Tool Works, Inc. v. Sweetheart Plastics, Inc.*, 436 F.2d 1180, 1187 (7th Cir. 1971), *cert. dismissed*, 403 U.S. 942, 91 S.Ct. 2270, 29 L.Ed.2d 722.

Defendant's contention that Lokey is rendered invalid because of alleged misrepresentations made in the Patent Office to obtain its allowance stands equally unsubstantiated upon this record. To place that contention in proper perspective, it is noted that no question is raised as to any representation made by the party Lokey. The contention rests upon the claimed effect of certain representations made in support of the copending application of Goodrich.

The issue might be disposed of upon the principle applied in *Noll v. O. M. Scott & Sons*, 467 F.2d 295 (6th Cir. 1972), *cert. denied*, 411 U.S. 965, 93 S.Ct. 2143, 36 L.Ed.2d 685, that a false representation can be relied on to in-

validate a patent only if the representation was made as to the application upon which the patent issued. In view of defendant's earnest contention that the Examiner was misled, with the result that Lokey was allowed, the merit of the contention is considered.

The contention rests upon three statements taken from the context of the prosecution of Goodrich 287 and the file of the interference which devolved as an adjunct thereto.

The first excerpt is taken from an amendment filed on behalf of Goodrich, which stated:

> "It will be appreciated that the Single patent was issued over 63 years ago and during that long period of time the combination of a multi-ply bag with gussets has remained unknown, and therefore, a multi-ply bag with stepped gussets certainly does not appear to be an obvious combination."

Defendant contends that that statement is a misrepresentation, in view of plaintiff's statement in its answers to interrogatories that it had sold gusseted, multiwall bags in the United States since the early 1930's. However, there was no inquiry in interrogatories as to the particular construction embodied in such bags. Further reference to plaintiff's answers to interrogatories places the issue in perspective. Plaintiff stated that it first sold pinch bottom bags in 1962, and that its first sale of gusseted, pinch bottom, open mouth bags was in April, 1962.

When read in the context of the issue facing the Patent Examiner in 1963, the Single reference cannot be construed as a misrepresentation. The Goodrich application related to bags of multiwall, stepped gusset, pinch bottom construction. The quoted statement urged patentability of that construction over the single ply, stepped gusset, pinch bottom bag of Single. It was wholly immaterial that multiwall, gusseted bags of an entirely different construction were theretofore known. Moreover, when the Patent files are read as a whole, it is readily apparent that the Examiner had before him references and information that such bags were old in the art. It would deny credibility to assume that the Examiner did rely upon a misstatement of counsel in a co-pending file, and ignore other information before him, in reaching his determination that Lokey was patentable over the prior art.

Other misrepresentations alleged to have been made are:

> "The Schenck patent 2,582,286 shows only a single ply construction and hence cannot have successively and progressively stepped longitudinal edges bonded one to the other in overlapped relation and disposed between a pair of oppositely disposed gussets."

a. A statement on behalf of Goodrich, filed November 23, 1965, that:

b. A statement on behalf of Goodrich, in opposition to Lokey's motion to dissolve the interference, that "it will be appreciated that Schenck merely shows a single walled bag."

The quoted statements are taken out of a larger context, with the result that their intendment becomes somewhat distorted. Moreover, it is not seen that these statements could have misled or influenced the Examiner when they are viewed in the historical context of the Patent Office proceedings. The same examiner was assigned to both the Goodrich and Lokey applications. He rejected the Lokey claims as unpatentable over Schenck. Mr. Lokey responded with the affidavit of Woronoff, which summarized test results achieved with bags of Schenck construction as compared to bags embodying the Lokey concept. The Examiner, on the strength of that affidavit, noticed Mr. Lokey to copy a claim comprising the elements of claim 11 of the Goodrich application and Goodrich to copy a claim comprising the elements of claim 8 of the Lokey application for interference purposes. Those claims were then allowed and the interference declared, upon facts then apparent which the Examiner deemed sufficient to distinguish Schenck from the structures embodied in those claims.

[4] To sustain this defense, defendant has the burden of proving that the representations upon which it relies were false and were made fraudulently and with deceptive intent. *E. g., Armour & Company v. Wilson & Company*, 274 F.2d 143, 148 (7th Cir. 1960); *Ransburg Electro-Coating Corp. v. Nordson Corp.*, 293 F.Supp. 448 (N.D. Ill.1968). It is questionable whether any such statement was a misrepresentation when the same is considered in context. It is certain that the requisite intent is not proved.

The court finds and concludes that Lokey Patent No. 3,650,460 is valid.

The RE317 and RE318 Patents

Two procedural arguments are dealt with before reaching the substance of the defendant's reliance upon its contentions of invalidity of the patents.

At the outset, the defendant urges the position that the court, in denying plaintiff's motion under 35 U.S.C. § 256, for an order directing the Commissioner to correct the 356 and 451 patents by deleting the name of Mr. Waxlax from each as a joint inventor and by adding to each a "continuation-in-part" reference to the Goodrich 287 application, determined that plaintiff was not entitled to revision of those patents in the manner requested. That position is then asserted as a basis for argument that RE317 and RE318 are not validly issued for the reason that the action of the Patent Office granting reissue fatally conflicts with this court's prior decision related to the Section 256 motion.

It is clear that defendant reads too much into the court's orders denying the Section 256 motion. The historic perspective of that motion as above recited is not repeated here, except to reiterate that the motion was filed on the very eve of the date set for trial.

[5] There can be no question that a court is empowered by Section 256 to direct the correction of inventorship in a proper case,[5] and for present purposes it is assumed, without so deciding, that this court would have had the power to order correction of these patents to encompass the total context of the prayer of that motion. Thus, the only issue is the question whether the orders entered constitute a ruling upon the merits of the prayer for relief therein contained. The orders cannot be so construed. The motion was grounded upon the allegation that plaintiff had just then discovered that Mr. Waxlax had not contributed to the inventive concepts embodied in the 356 and 451 claims.[6]

The court's ruling did not relate to the merits of the motion. It was apparent that the motion would interject into the cause new issues related to the factual accuracy of plaintiff's contentions and to plaintiff's good faith in the premises. It was equally apparent that interjection of new issues into the case on the eve of trial opened the door for the need of further and perhaps extensive additional discovery. It was further apparent that those considerations would undo the efforts of all concerned, theretofore devoted to the definition of the issues presented and to scheduling the rather extensive time required for the trial thereof.

5. The third paragraph of Section 256 provides, in pertinent part: "The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section [by showing that the omission or misjoinder resulted from error 'without any deceptive intention']. The court before which such matter is called in question may order correction of the patent . . ."

6. The record does reflect testimony by Mr. Waxlax that he had just discovered about January 14, 1974, that no part of the claimed inventive matter which he had contributed to the application, as reflected in drawings and specifications therein, had been allowed and embodied in the claims of the patents. Certain testimony of Goodrich is corroborative of Waxlax.

The court entered its order denying the motion upon those considerations. The orders cannot be construed as a ruling upon the merits of the factual allegations asserted in the motion, since the court did not have before it the evidentiary material upon which the merits could then be weighed and determined. The orders neither precluded the plaintiff's filing of the application for reissue nor the Commissioner's power to consider those applications.

It is next contended by defendant that the reissue statute, 35 U.S.C. § 251, does not authorize the reissue of a patent to achieve a change of inventorship. That contention begs the real issue with which this court is faced. No court decision is found in which this question has been litigated, though the position of the Patent Office, as reflected in *Ex parte Scudder*, 169 U.S.P.Q. 814 (Bd. App.1971), is that the reissue section is properly employed to effect a change in inventorship.

A literal reading of Section 251 would seem to exclude an error in inventorship from the reach of the statute.[7] At least a cogent argument can be made for the premise that Section 256 provides a means and machinery for correction of errors in inventorship, and that there is no reason to approach that subject through the reissue procedures authorized by Section 251. In the factual context of this litigation, it is not necessary to consider that question, and nothing stated herein is intended to express any opinion by this court related to the proper application of Section 251 to that issue.

In the present factual context, the applications for reissue involved both a correction of inventorship and the insertion of a "continuation-in-part" reference which would entitle the plaintiff to a 1962 effective filing date for its patent application.

In the light of those circumstances, the critical issue becomes a question whether the statute is to be strictly construed as limiting reissue to correction of "defective" specifications or drawings, or to correction of an inadvertently drawn claim of invention "claiming more or less" than the inventor was entitled to claim, or whether it is to be liberally construed to authorize reissue to define the rights of a patentee which were either too strictly or too broadly stated through inadvertence and without any deceptive intention.

A somewhat analogous question was before the court in *State of Israel v. Brenner*, 273 F.Supp. 714 (D.C.D.C. 1967), aff'd, 130 U.S.App.D.C. 318, 400 F.2d 789 (1968). The patentee, in obtaining a U.S. patent, had failed to file with its application a certified copy of an earlier analogous, foreign application. It then filed an application under Section 251 for a reissue to correct that deficiency and thereby obtain the priority of the earlier filing date of the foreign application under the provisions of 35 U.S.C. § 119. Against the contention that Section 251 restricted reissue to the office of correcting errors in specifications, drawings, or the claims of invention only, the court said that the statute must be liberally construed. It held that the statute did authorize the reissue of a patent to correct a claim to a right of priority which inadvertently, and without deceptive intent, had not been asserted in the original application. 273 F.Supp. at 717.

[6, 7] Justice and reason support the result reached in *Brenner*, that reissue

7. That section provides in part: "Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent. No new matter shall be introduced into the application for reissue."

for the correction of "claims" is not limited solely to the claims of invention.[8] It encompasses, as well, all claims of rights and priority to which the patentee would have been entitled had there not been inadvertent omission in his original application. Literal construction of a statute, in abjuration of reason and blind indifference to the ends of justice, is an untenable result in American jurisprudence. *Sorrells v. United States*, 287 U.S. 435, 446, 53 S.Ct. 210, 77 L.Ed. 413 (1932).

[8] This plaintiff, with sole inventorship in Goodrich, would have been entitled to retain the 'continuation-in-part" reference and the priority of the 1962 filing date of the Goodrich 287 application. The court holds that the Patent Office correctly applied Section 251 to permit reissue under those circumstances.

Validity of RE317 and RE318

These reissue patents have the same effect as if the patents had originally issued in their amended form, and to the extent that the reissue claims are identical to the original claims, the reissue patents are a continuation of the original patents from the date of such originals. Reissue does not affect any action pending at the time of reissue, and the same shall proceed as if the patents had originally issued in their amended form. 35 U.S.C. § 252.

In following context, two contentions against RE317 only are first treated, followed by exposition related to both RE317 and RE318, generically.

Contentions Limited to RE317

It is first contended that RE317 (original 451 patent) is invalid as constituting double patenting in view of RE318 (original 356 patent). That argument borders on the specious.

[9] The Examiner determined that the original application embodied more than one invention and required an election among species. The species elected was embodied in the 356 patent. A divisional application was then filed embodying other inventive concepts contained in the original application and the same was allowed as the 451 patent. That procedure was in all respects in compliance with the provisions of 35 U.S.C. § 121. It must be presumed that the Examiner resolved any question of double patenting when he allowed the divisional application, absent clear and convincing proof to overcome that presumption. *TSC Industries, Inc. v. International Harvester Co.*, 466 F.2d 53, 57 (7th Cir. 1968).[9] There is absent any proof in this transcript to sustain the contention.

[10] The second excepted contention, that the claims of RE317 are indefinite within the meaning of 35 U.S.C. § 112, is equally without merit. That section requires that a claim embody sufficient specificity to permit persons skilled in the art to understand and practice the teachings of the claim. Defendant's proof against the presumption that the Examiner did determine that the patent claims do comply with Section 112 is limited to assertions of its patent expert. In essence, that witness, a patent attorney, stated that he could not understand what was being claimed in that portion of claim related to a bonding agent "substantially covering" the exposed gusset portions and front and rear wall surface portions, in the light of drawings indicative that such agent was applied to only a part of such exposed portions of the bag end. Yet,

8. The reissue section is "remedial in intent" and must be construed liberally. *Hockey Springs Mfg. Co. v. Friedman Bros. Furniture Co.*, 509 F.2d 55 (7th Cir. 1975).

9. In fact, this issue might be treated as moot. In its reissue application, which led to issuance of RE317, plaintiff filed a terminal disclaimer, consenting that the monopoly of the 451 patent (thus RE317) terminate on the date of termination of the 356 patent. That disclaimer, in effect, removes any issue of double patenting from the case.

none of defendant's technical experts, who were skilled in the bag art, professed any problem in understanding the inventive concept claimed, or in applying it to the practical art of producing bags. When read in the context of the total structure described in the patent, these claims are seen to be sufficiently definite to comply with the requirements of Section 112. *Cannan Products, Inc. v. Edward Don & Co.*, 388 F.2d 540 (7th Cir. 1968).

Contentions Against Validity of Both RE317 and RE318

Defendant's arguments are addressed to the validity of the claims in the light of the total history of Patent Office proceedings, which led, successively, to the grant of the original patents and the reissue patents, and to contentions directed against the reissue patents alone.

In the first context, argument is bifurcated, contending for the necessity of first determining whether the original claims were invalid under 35 U.S.C. § 102(b), because the same were anticipated by plaintiff's French 471 patent, before proceeding to the broader issue related to the validity of the reissue claims. That argument seems to be compelled by the effect of the fact of reissue.

[11] Under Section 252 the reissue patents constitute a continuation of the original patents which they, respectively, supersede, with effective dates identical to those of the original applications. As previously noted, each is identical to its original counterpart, with the exception that Goodrich is named as the sole inventor in each, and each reissue patent is cross-referenced as a continuation-in-part of Goodrich's 287 application, filed January 29, 1962. Thus, each of these reissue patents has as an effective filing date, the filing date of the 287 application as to all common subject matter. 35 U.S.C. §§ 120, 252; *Technicon Instruments Corp. v. Coleman Instruments Corp.*, 385 F.2d 391 (7th Cir. 1967). Plaintiff occupies the same position as if the continuation-in-part references had never been deleted from the original applications. *Sticker Industrial Supply Corp. v. Blaw-Knox Co.*, 321 F.Supp. 876 (N.D.Ill.1970).

Though it be recognized that there existed cogent argument against the 356 and 451 patents with reference to said French patent,[10] the latter patent is no longer available as a reference against the reissue patents in suit. The similarity between the current factual situation and that of *Sticker, supra*, is noted. In that litigation the original patent was held to be invalid because of the patentee's prior public use of the claimed invention. *Sticker Industrial Supply Corp. v. Blaw-Knox Co.*, 405 F.2d 90 (7th Cir. 1968). Thereafter, the patentee obtained a reissue patent incorporating a cross-reference to another patent application which antedated such prior use. In sustaining the reissue patent, the District Court held that the reissue restored the patentee to the position which actually existed on the date of the original patent and obviated the prior use bar. 321 F.Supp. at 879.

Pertinent to this context is the defendant's further argument that a patentee, by reissue, may not recapture "subject matter" which was voluntarily abandoned in response to a Patent Office rejection of an original application. However, that argument is diluted by the necessity of defendant's own admission that its reliance is based upon precedents related to the attempted recapture of patent claims which had been abandoned to obtain issuance of the original patent. *E. g., Altoona Publix Theatres v. American Tri-Ergon Corp.*, 294 U.S. 477, 55 S.Ct. 455, 79 L.Ed. 1005 (1935); *Tec-Pak, Inc. v. St. Regis Paper Co.*, 491 F.2d 1193 (6th Cir. 1974).

The instant suit does not deal with abandonment of a substantive, inventive

10. *Cf., Frantz Mfg. Co. v. Phenix Mfg. Co.*, 457 F.2d 314, 320–322 (7th Cir. 1972); *Midtion Mfg. Co., Inc. v. Patterson-Weil Corp.*, 327 F.2d 457, 440–441 (7th Cir. 1964).

claim. What is involved is the claimed right of restoration to a priority as to the inventive embodiment of the original patents. The issue before us cannot be realistically distinguished from the factual background of the decisions in *Sticker v. Blaw-Knox* and *State of Israel v. Brenner, supra*. Plaintiff's restoration to a right of priority which the Examiner has approved does not expand the inventive monopoly claimed.

[12] It is not deemed necessary now to determine whether, but for the fact of reissue, the original patents would have been invalid over the French 471 reference. The effect of reissue is to accord to the patents an effective filing date which antedates publication of that French patent, and to negate that patent as a potential defense against the patents in suit, even if otherwise it would have rendered them invalid.

What has been hereinabove said in the Lokey context effectively disposes of defendant's contention of obviousness under 35 U.S.C. § 103. With the exception of the French 471 patent, the prior art introduced in evidence against these patents was the same as that upon which reliance was placed to defeat Lokey. In the present posture of this file, all such prior art, as well as Lokey and plaintiff's said French patent, was before the Examiner when the reissue patents were allowed.

There remains for consideration the several contentions of the defendant based upon a claimed estoppel, and to claims of wilful concealment by plaintiff of its French patent from the Patent Office, and of its having made false representations in both the original and reissue proceedings before the Patent Office.

[13] The estoppel argument rests upon the contention that plaintiff is estopped from relying upon the original Goodrich 287 filing date by reason of the inconsistent positions which it has taken before this court and before the Patent Office. In that context, defendant quotes statements from plaintiff's original brief that the 471 French patent does not disclose "the inventive combination" claimed in the first claim of each the 356 and 451 patents. In counterpoint, it summarizes statements made to the Patent Office in conjunction with the reissue applications that the inventions claimed in the reissue patents are substantially disclosed in the original Goodrich application. Ergo, it is contended that plaintiff is estopped from relying upon the continuation-in-part reference and also estopped from denying that its patents are invalid over its French 471 patent.

That rather tortured reasoning overlooks one salient fact. The quoted statements taken from plaintiff's original brief state only that the French 471 patent does not disclose the totality of the inventive combination claimed in the original patents. Plaintiff's claims in the Patent Office, with reference to the disclosures of Goodrich 287, merely stated its position that prior application contained generic disclosures which embraced the subject matter of the 356 and 451 patents, although the latter also disclosed and claimed patentable improvements. The estoppel theory, though novel, must be rejected. Plaintiff is entitled to its filing date of January 29, 1962, as to all common subject matter in the two applications. *Application of Grimme*, 274 F.2d 949, 47 CCPA 785 (1960).

[14] It seems to this court that there are two abiding principles applicable to the whole plethora of contentions that the Examiner was misled in the prosecution for both the original applications and the reissue applications. The first is that the presumption of validity which attaches to actions by the Patent Office not only recognizes the expertise of Examiners, but also assumes that those persons are possessed of a reasonable intellectual capacity, and that they apply both their expertise and intellect in reaching their decisions. The second is that misrepresentations which will bar validity of a patent must be

proved by clear and cogent evidence, not by the eloquence of counsel.

To sustain its contentions of misrepresentations, defendant has the burden of proving that plaintiff was possessed of knowledge of the facts and that it did intentionally misrepresent or conceal such facts from the Patent Office. *E. g., National Dairy Prod. Corp. v. Borden Co.*, 394 F.2d 887 (7th Cir. 1968), *cert. denied*, 393 U.S. 953, 89 S.Ct. 378, 21 L.Ed.2d 364.

[15] Related to defendant's contention that there was fraudulent concealment by plaintiff of the French patent upon prosecution of its original application, there is no credible evidence as to the publication date of that patent. There is no evidence that plaintiff had knowledge of its publication at that critical time. Indeed, the only record evidence as to plaintiff's knowledge is its statements in interrogatories that its records do not reflect the date of publication of the patent; that the stated date, "March 9, 1964," contained in its statement as to pertinent prior art in the reissue file wrapper, was information "only by hearsay," and that it has no information other than hearsay as to the correct publication date thereof.

In that context, upon the trial of this cause, defendant's exhibit 46, an uncertified photocopy of the French patent, was admitted in evidence over objection. Defendant has now offered in evidence its exhibit 62, a certified copy of that document bearing a stamp indicating that it was filed in the U. S. Patent Office on April 20, 1964. In its brief, defendant states that it obtained that document shortly before trial "against the contingency" that its uncertified exhibit 46 might not be admitted. When 46 was admitted, defendant did not offer the certified exhibit. It was first produced on April 21, 1975, and at that time offered in evidence. Without condoning the intentional withholding of the document, it is nevertheless admitted in evidence for whatever value it may have. That exhibit has no evidentiary value on plaintiff's possible knowledge regarding either the fact or date of publication of the French patent when the original application was prosecuted. Defendant was required to prove publication as a statutory bar, plaintiff's knowledge of that fact, and plaintiff's intentional concealment of that fact from the Patent Office. Even if the delayed exhibit be accepted as evidence of publication more than one year prior to the Goodrich-Waxlax application, there is no evidence to prove either knowledge or concealment.

There is also lacking any proof related to contentions that the Examiner was fraudulently misled during prosecution of the reissue applications. At that time the Examiner had before him all references herein cited by defendant upon the issue of obviousness, including Lokey and the French 471 patent. He also had before him the motions and supporting affidavits filed in this cause and the transcript of the testimony of Waxlax and Goodrich before this court related to those issues. Commercial success claims proposed to the Examiner were supported by the proffer of a complete transcript of the testimony of Mr. Searle before this court.

The file wrappers indicate that the Examiner was fully advised on the background and history of the reissue applications, including full advisement as to circumstances surrounding Mr. Waxlax's verification of the original application. They also reflect a first action by the Examiner denying all claims as unpatentable over Lokey, plaintiff's response to that ruling, and a subsequent conference with the Examiner. Following that conference, the claims were allowed.

The response to the initial action of the Examiner, *inter alia*, included the contention that Lokey was not a prior art reference, inasmuch as the 287 application was prior in time to the filing of the Lokey application. Reference was made to *In re Buss*, 474 F.2d 1276, 59 CCPA 1342 (1973), and *Application of Frilette*, 436 F.2d 496, 58 CCPA 799 (1971), as supporting that position. That sequence of events leads to a contention by defendant that those references misled the Examiner, with the result that reissue was allowed, with the Examiner rejecting Lokey as prior art. That contention is faulty for three reasons. First, the cited cases do lend support to the position taken in the response, and the reference to them cannot be construed as a misrepresentation. Secondly, the court will neither presume that the Examiner did not consider the bearing of those cases upon his decision, nor that he was too dense to understand them. Thirdly, the statement by defendant that the Examiner did not consider Lokey as prior art is an interpretation by counsel, not a record fact. In the last context, the response not only cited those case references, but, also, urged that the claims were allowable over Lokey as a prior art reference. The claims were later allowed on the files as then constituted by notification of allowance. The file wrappers are equally consistent with the interpretation that the Examiner did consider Lokey as a prior art reference when that final action was taken.

Moreover, defendant had notice on August 16, 1974, that the reissue applications had been filed. The applications were not formally allowed until October 30, 1974, and November 13, 1974, respectively, and the patents did not issue until January 28, 1975. It had adequate opportunity to contest the accuracy or sufficiency of affidavits or other representations contained in the file. By its own admission, it did nothing.

[16] The Examiner has ruled upon the applications, including the question of the sufficiency of supporting information. Though it be true, as defendant suggests, that the Patent Office action is subject to review, it is also true that that action is clothed with the same presumption of regularity as is any other of its actions. Something more than the belated protestations of counsel is necessary if the Examiner's decision is to be now undone.

Defendant's Claim of Intervening Rights as Against RE317 and RE318

[17] Under the provisions of 35 U.S.C. § 252, enacted in 1952, a person may continue his use of an inventive concept claimed in a reissue patent, such use having commenced prior to reissue, "unless the making, using or selling of such thing infringes a valid claim of the reissued patent which was in the original patent." [11]

That section merely codified equitable principles devolved under the prior law. Thus, the courts had held that intervening rights did vest as to the manufacture and sale of any article which was not included in the original claims, but that no intervening rights arose against any reissue claim which was identical to a claim of the superseded original patent. *E. g., Kansas City Southern Ry. Co. v. Silica Products Co.*, 45 F.2d 503 (8th Cir. 1931), *cert. denied*, 284 U.S. 626, 52 S.Ct. 11, 76 L.Ed. 533. Deci-

11. That section provides in pertinent part:
"The surrender of the original patent shall take effect upon the issue of the reissued patent, and every reissued patent shall have the same effect and operation in law, on the trial of actions for causes thereafter arising, as if the same had been originally granted in such amended form, but in so far as the claims of the original and reissued patents are identical, such surrender shall not affect any action then pending nor abate any cause of action then existing, and the reissued patent, to the extent that its claims are identical with the original patent, shall constitute a continuation thereof and have effect continuously from the date of the original patent.
"No reissued patent shall abridge or affect the right of any person or his successors in business who made, purchased or used prior to the grant of a reissue anything patented by the reissued patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased or used, unless the making, using or selling of such thing infringes a valid claim of the reissued patent which was in the original patent."

sions construing Section 252 have held that no intervening rights arise against a reissue claim which is identical to a valid claim of the original patent. *E. g., Akron Brass Co. v. Elkhart Brass Mfg. Co.*, 353 F.2d 704, 708–709 (7th Cir. 1965); *Schnell v. Allbright-Nell Co.*, 348 F.2d 444, 450 (7th Cir. 1965); *Weller Mfg. Co. v. Wen Products, Inc.*, 231 F.2d 795, 799 (7th Cir. 1956).[12]

Decisions sustaining a claim of intervening rights have arisen in the classic situations in which the original claims which were carried over into a reissue patent were substantively invalid, *e. g., G. Leblanc Corp. v. H. & A. Selmer, Inc.*, 310 F.2d 449, 453–454 (7th Cir. 1962), or in which the reissue claims are broader than the superseded original claims. *E. g., Keller v. Adams-Campbell Co.*, 264 U.S. 314, 317, 44 S.Ct. 350, 68 L.Ed. 705 (1924); *Moto Meter Gauge & Equip. Corp. v. E. A. Laboratories*, 55 F.2d 936 940 (E.D.N.Y.1932). Inasmuch as all RE317 and RE318 claims are identical to the superseded original claims, no intervening rights could arise unless it must be held that the original claims were legally invalid.

Defendant argues that the court must determine that the 356 and 451 patents are invalid as non-patentable over the prior art, and that, ergo, there is no "valid" claim of those original patents which is carrier over into RE317 and RE318. However, the issue presented here is not quite so simplistic.

If it be assumed, for the sake of exposition, that without reissue the 356 and 451 patents would fall as anticipated by plaintiff's French patent, there yet remains the question whether that patent remains as a relevant reference under the facts of record. The effect of the allowance of reissue with the "continuation-in-part" reference is to give the applications upon which the patents issued an effective filing date which antedates the French patent. It would follow that the latter patent no longer exists as a reference against either the original patents or the reissue patents. The reissue patents contain no substantive change. They merely correct the identity of inventorship and revise the effective date of constructive notice.

Defendant correctly observes that the issuance of a patent is constructive notice to the world of a claim of monopoly, that practitioners in the art are entitled to rely upon the patent as the patentee's final expression defining his proprietary rights, and that such persons may proceed with the manufacture of any article not covered by a valid claim of the patent. However, defendant reads too much into that horn-book statement of equitable principle. Though a practitioner may rely upon the claims of a patent as the total statement of the inventive concept claimed, he acts at his peril when he usurps the inventive concept which is embodied in the presumptively valid claims. His personal determination that the claims are invalid is not a defense to a claim of infringement.

In essence, the above observation describes this defendant's conduct. Defendant was chargeable with notice of the content and scope of the original patent claims. It was equally chargeable with knowledge that its use of the inventive concepts therein described might lead to a claim that the patents were infringed. Acting upon the assumption that the claims were invalid, it thereby assumed the heavy burden of proving such invalidity to successfully

12. It would seem that the word "valid" adds nothing to the legal principle stated, and that the word of critical significance is "identical." It is axiomatic that an invalid claim does not attain validity by its being incorporated in a reissue patent.

The doctrine of intervening rights assumes the existence of a valid reissue claim. In the circumstance of a substantively invalid original claim being incorporated into a reissue patent, the issue arising is the question of validity of the reissue claim. If there is no valid claim, and thus no right of inventive monopoly, there is no basis for invoking the intervening right doctrine.

defend against a claim that the patents were infringed.

[18] No reported case is found which is precisely in point on this issue. In a somewhat similar context, applying a prior statute, the United States Court of Appeals for the Eighth Circuit held that the use of the inventive elements of an original claim, upon the user's speculation that such claim was invalid, did not create any intervening right against a reissued patent. *Kansas City Southern Ry. Co. v. Silica Products Co.*, 48 F.2d 503 (8th Cir. 1931). The same principle must apply here. It must be deemed immaterial that, but for the reissue, the claims of the original patents might be shown to be anticipated by the French patent and, thus, invalid.

It cannot be said in any literal sense that the validity of these claims was created by their inclusion within the reissue patents. The only result of the action of the Commissioner in granting the reissue patents was to negate an apparent state of facts which might have presented a viable defense.

It cannot be said in equity and conscience that any intervening rights arose in the premises.

Patent Misuse

Defendant asserts, as a defense against all three patents in suit, that relief should be denied to plaintiff because of its misuse of the patents. Specifically, it is contended that plaintiff has conditioned the sale of an unpatented field closer unit upon the acceptance of a license under the three patents. Thus, defendant asserts that the plaintiff has tied its sale of a nonpatented commodity to the acceptance of licenses under the Lokey and Goodrich patents.

That theory is a novel expansion of the patent-misuse principle. It is not only a premise lacking any firm legal foundation, but, also, a will-o-the-wisp, substantially lacking in evidentiary support.

Defendant, for support of this theory, relies upon three documents in evidence. The first derives from a non-exclusive licensing agreement between plaintiff and Bancroft Bag, Inc., executed in 1972. Reliance is placed upon a statement in a letter from an agent of plaintiff to an agent of Bancroft which states in part: "As we discussed, when you sign the pinch bottom licensing agreement, your salesmen will also have the opportunity to sell St. Regis pinch bottom field closers along with your bags." Reliance is also placed upon two proposed agreements submitted by plaintiff to Chase Bag Company. The first involved a tendered license under the Lokey and Goodrich patent applications. The second was a contemporaneously submitted service agreement which included the provision that St. Regis could, during the life of the patent license agreement, "sell or lease to Chase" filling or closing equipment of whatever kind "St. Regis is at such time selling, or leasing" to other customers. Chase did not accept the licensing proposal.

There is nothing more, except that the record does reflect that plaintiff has from time to time submitted to its competitors, including the defendant, proposals for licensing agreements under the patents which contained no reference to field closers or other unpatented commodities which plaintiff sells.

[19] No purpose is served in belaboring the issue. Perhaps the most incisive exposition upon the subject of patent misuse is found in *General Tire & Rubber Co. v. Firestone Tire & Rubber Co.*, 349 F.Supp. 333, 341–344 (N.D. Ohio 1972). In the course of an exhaustive review of reported cases, that court accurately stated the applicable principles as follows:

"[Licensing agreements which have been determined to constitute patent misuse] are tying arrangements which require the purchase of unpatented goods [as a condition for the grant of a patent license]. 349 F.Supp. at 342.

"[Unless a patentee has placed a construction upon a patent license agree-

ment which would grant to him a broader monopoly than that which his patent affords], the patentee could not be deemed guilty of misuse. *Ibid.*

"To invoke the doctrine of patent misuse, the challenger must establish that the patentee used the patent in an attempt to monopolize the sale of unpatented goods or to gain some market or other advantage [to which he is not entitled by virtue of his patent monopoly]." 349 F.Supp. at 344.

No decided case is cited to, or found by, the court which suggests that the tying of a non-patented article as a condition for the grant of a license under a patent would constitute misuse of the patent; but, in any event, disposition of this argument in the case at bar rests upon the simple conclusion that the contention, if the same be legally tenable, is almost totally lacking in evidentiary support.

Summary and Ultimate Findings and Conclusions

[20] The above memorandum contains this court's findings of fact and conclusions of law. The shotgun approach to defense adopted here, while containing some resourceful elements, in the judgment of this court, fails to reach the mark with significant force.

Each, Lokey Patent No. 3,650,460, Goodrich Reissue Patent No. RE28,317 and Goodrich Patent No. RE28,318, is valid. Those patents are infringed by products manufactured by the defendant, as exemplified by the several exhibits hereinabove found to infringe. Plaintiff is entitled to a judgment enjoining further infringement of the several patents, or any of them, to its damages for prior infringements and its costs of suit. Plaintiff's damages will be computed at the rate of 1.2% of defendant's net sales of infringing units produced, the said percentage figure being based upon the royalty specified in plaintiff's standard licensing agreement under the patents in suit, which must be considered reasonable and a sound basis for computing damages.

This suit is not deemed to be the exceptional case which would require the award of attorneys' fees under the provisions of 35 U.S.C. § 285, or justify the awarding the treble damages under 35 U.S.C. § 284.

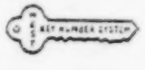
Judgment is entered for the plaintiff against the defendant as follows:

a. Defendant is enjoined from further infringement of the patents in suit.

b. Plaintiff shall recover from defendant its damages, computed on the basis of 1.2% of defendant's net sales of infringing units, with computation of the amount of damages to abide an accounting by defendant before this court.

c. Plaintiff shall recover from defendant its costs of suit.

d. Defendant's counterclaim directed against the patents in suit is dismissed with prejudice.



CAYMAN MUSIC, LTD., et al.,
Plaintiffs,
v.
Alphonse REICHENBERGER,
Defendant.
No. 75-C-59.

United States District Court,
W. D. Wisconsin.
Aug. 28, 1975.

Action was instituted for injunctive relief and money damages for alleged infringement of copyright by the giving of public performances of a copyrighted composition for the entertainment of persons frequenting defendant's place of business. Defendant moved for trial by jury and plaintiffs moved to strike that

United States Patent

Lokey

[15] **3,650,460**

[45] **Mar. 21, 1972**

[54] **PAPER BAG**

[72] Inventor: Burke P. Lokey, Covington, Va.

[73] Assignee: Westvaco Corporation, New York, N.Y.

[22] Filed: Aug. 13, 1962

[21] Appl. No.: 216,388

[52] U.S. Cl. 229/55, 229/57, 229/62
[51] Int. Cl. B65d 31/02
[58] Field of Search 229/53, 55, 62, 41

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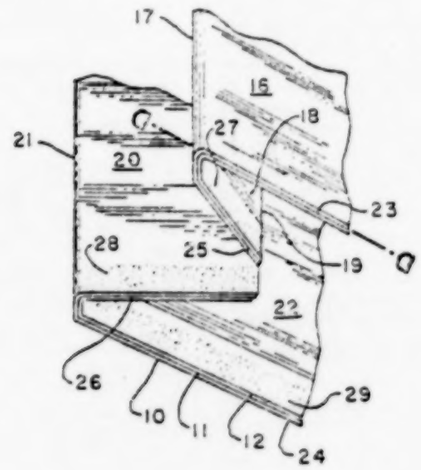
Primary Examiner—Donald F. Norton
Attorney—Robert S. Grimshaw and William T. Mefford

[57] **ABSTRACT**

A gusseted, multi-ply bag having a rear surface and gusset portions adhered to a front surface of the bag to form an end closure and a longitudinal seam formed by the longitudinal edges of each ply being bonded together in overlapped relation.

5 Claims, 4 Drawing Figures



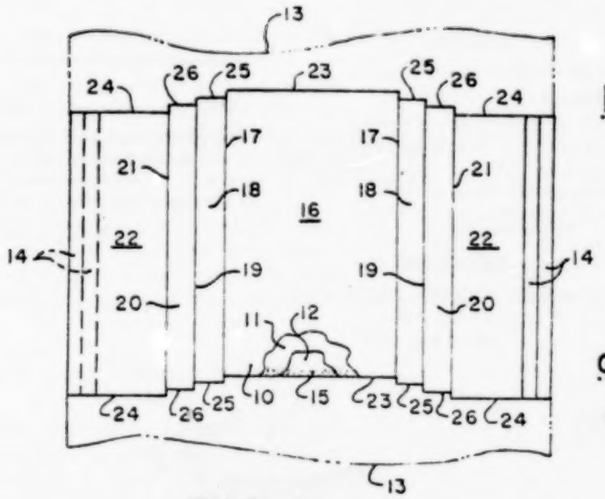


FIG. 1

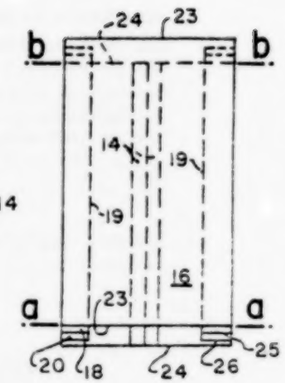


FIG. 2

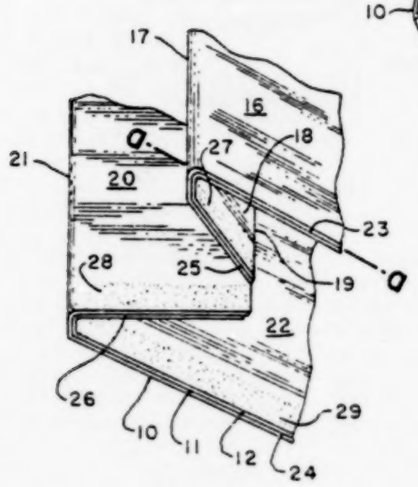


FIG. 3

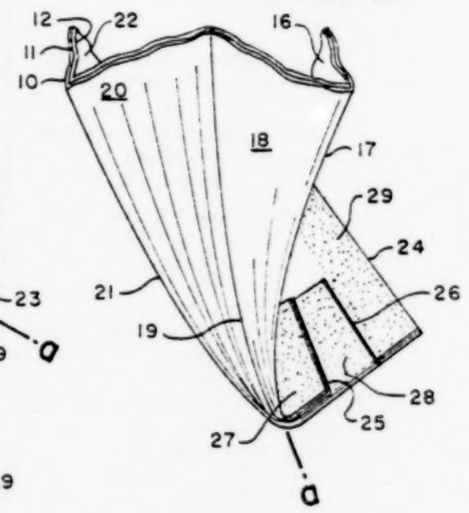


FIG. 4

INVENTOR.
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BY
William D. Gifford
PATENT AGENT

PAPER BAG

This invention relates generally to improvements in bags and more particularly to improvements in the end seals of gusseted bags.

The need for an inexpensive bag having glued end seals of improved strength capable of carrying heavy loads of material, such as cement or fertilizer, has been known to exist in the industry for many years. My bag is particularly suited to fulfill this need.

The strength of the bag results from the novel arrangement of the different walls forming the tubular body of the bag. The walls forming the gussets are arranged to cooperate in the end seals so that the glue is applied to areas that hold the gussets firmly locked in place. These glued areas are unusually large as compared to similar bags which add to the strength of the end seal.

The cost is reduced by the shape of the blank forming the tubular body of the bag which is designed so that consecutive bags can be cut from a plurality of continuous webs of paper without wasting the paper of any web.

The cost of the bag is further reduced by the simple overlapping fold used to seal off the ends of the bag. This fold is made possible through the aforementioned novel arrangement of the different walls forming the tubular body of the bag.

These and many other advantages of this invention will become clear in connection with the detailed description that follows in which:

FIG. 1 is a plan view of the bag blank.

FIG. 2 is a view of the bag folded into a tubular body before the ends are sealed.

FIG. 3 is an enlarged fragmentary perspective view of the typical corner of the tubular body of the bag before the ends of the bag are sealed.

FIG. 4 is another perspective view of a typical corner of the bag after the ends are partially folded.

Referring to the drawings, the bags contain three plies of suitable paper 10, 11, and 12. The plies 10 and 12 form the outer and inner surfaces of the tubular body of the bag, respectively. The number of plies of paper forming the bag may be varied to suit the particular end use of the bag with some of the plies formed from specialty papers to give the bag unique properties, such as water resistance and scuff resistance. All of these changes can be resorted to without specifically altering the novel features of the bag.

Referring to FIG. 1, an arrangement of consecutive bag blanks in continuous webs is represented with portions of adjacent bag blanks indicated by the phantom lines 13. The arrangement specifically points out the lack of waste paper between the bag blanks showing that each cut across the paper web forms an end of adjacent bags. The plies of paper making up the bag blanks, beginning with ply 12 and ending with ply 10 are shifted to the left as viewed in FIG. 1, thus leaving exposed longitudinal marginal portions 14. These exposed longitudinal marginal portions 14 form the longitudinal seam of the bag, by being glued together when the bag is folded into a tubular body as shown in FIG. 2. The plies of paper, 10, 11, and 12 forming the bag are adhesively joined together along the ends as represented by the shaded area 15.

Each ply of the bag blank contains a front wall 16 that is foldably attached along longitudinal edges 17 to the first gusseted walls 18. The first gusseted walls 18 are foldably attached along longitudinal edges 19 to second gusseted walls 20. The second gusseted walls 20 are foldably attached along longitudinal edges 21 to the rear wall 22. The rear wall 22 is formed from two sections, one attached to each of the second gusseted walls 20. The rear wall 22 is adhesively joined along the exposed longitudinal marginal portions 14 when the bag blank is formed into a tubular body, and the two portions of the rear wall 22 become a single wall of the bag.

As shown in FIGS. 1 and 2, the free edges 23 of the front wall 16 are stepped above the free edges 24 of the rear wall 22. The free edges 25 of the first gusseted wall 18 and the free edges 26 of the second gusseted wall 20 terminate in a stepped

pattern intermediate of the free edges 23 of the front wall 16 and the free edges 24 of the rear wall 22. The free edges 25 of the first gusseted wall 18 associated with the front wall 16 through the longitudinal edge 17 extend upwardly beyond the free edge 26 of the second gusseted wall 20 that is associated with the rear wall 22 through the longitudinal edge 21. The walls are substantially equal in longitudinal length and each step is substantially equal in longitudinal length. As a result, the bag blank forms a tubular body having ends that contain rectangular glue receptive areas of substantially equal size for the first gusseted wall 18 and the second gusseted wall 20.

Since each wall is substantially equal in longitudinal length and since each wall has free edges longitudinally displaced from adjacent walls in a stepped pattern, with each step being substantially equal, both ends of the tubular body forming the bag are similar and each corner of the tubular body forming the bag are similar.

The tubular body of the bag in FIG. 2 is formed by folding the bag blank of FIG. 1 along the longitudinal edges 17, 19, and 21, so that the first gusseted wall 18 and the second gusseted wall 20 are overlapped and folded between the front wall 16 and the rear wall 22. The ends of the tubular body are sealed by folding one end of the bag upwardly along line *a—a* and the other end of the bag downwardly along line *b—b*, and then folding these portions back upon the outer surface of the tubular body of the bag formed by the ply 10.

The relation of a typical corner of the tubular body forming the bag is better shown in FIGS. 3 and 4. The first gusseted wall 18 contains a rectangular glue receptive area indicated by the shaded area 27 and the second gusseted wall 20 contains a rectangular glue receptive area indicated by the shaded area 28. Notice that the longitudinal length of the glue area 27 is substantially equal to the longitudinal length of the glue area 28 as follows from the substantially equal stepped pattern of the free edges of the bag blank. In addition, notice that the free edges of each ply are coincident. The longitudinal length of the rectangular glue receptive area 27 and the rectangular glue receptive area 28 is approximately 1/3 the distance separating the free edge 23 of the front wall 16 from the free edge 24 of the rear wall 22, and the rectangular glue receptive area 29 extending beyond the free edge 26 of the second gusseted wall 20 is approximately equal in longitudinal length with the longitudinal length of the rectangular glue receptive areas 27 and 28 of the first gusseted wall and the second gusseted wall 20, respectively.

The bag described herein is uniquely simple, yet has strength properties superior to many forms of multi-wall bags. The blank forming the bag contains cross cuts that are coincident, thus allowing the simultaneous cutting of all plies of paper forming the walls of the bag. The simplicity of the bag construction carries over into the tubular body of the bag which is simply formed from the bag blank. The simplicity of the conversion also aids in the reduction of the overall cost of the bag.

It should be realized that many modifications and variations are possible that are still within the scope of this invention which is covered by the attached claims.

I claim:

1. A gusseted multiwall bag formed from a continuous tube of plies of paper comprising:

a. a tubular body portion

b. a first end structure having

i. a front wall,

ii. a first gusset wall longitudinally connected to said front wall along a first longitudinal edge,

iii. a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and

iv. a rear wall longitudinally connected to said second gusset wall, along a third longitudinal edge,

v. the front wall being cut perpendicularly to and along the first longitudinal edge to expose an upper portion of the first gusset wall and forming a first step,

vi. the first gusset wall being cut perpendicularly to and along the second longitudinal edge to expose an upper portion of the second gusset wall and forming a second step,

vii. the second gusset wall being cut perpendicularly to and along the third longitudinal edge, to expose an upper portion of the rear wall and forming a third step,

viii. the three steps being approximately equal in longitudinal length, and

ix. the axis of closure of the end being substantially coincident with the upper edge of the front wall, and

c. a second end structure similar to the reverse of the first end structure.

2. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to

overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation, and said end of the tube including all of said overlapped portions and surfaces being folded against said front surface and selectively adhered in position to form said assembled bag end.

* * * * *

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,650,460 Dated March 21, 1972

Inventor(s) Burke P. Lokey

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

After Claim 2, insert:

3. A gusseted multiwall bag formed from a continuous tube of plies of paper comprising:

(a) a tubular body portion composed of a plurality of plies,

(i) the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation,

(b) a first end structure having

(i) a front wall,

(ii) a first gusset wall longitudinally connected to said front wall along a first longitudinal edge,

(iii) a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and

(iv) a rear wall longitudinally connected to said second gusset wall along a third longitudinal edge,

(v) all of the plies in the front wall being flush cut perpendicularly to and along the first longitudinal edge to expose completely the upper portion of the first gusset wall and form a first step,

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(vi) all of the plies in the first gusset wall being flush cut perpendicularly to and along the second longitudinal edge to expose completely the upper portion of the second gusset wall and form a second step,

(vii) all of the plies in the second gusset wall being flush cut perpendicularly to and along the third longitudinal edge to expose completely the upper portion of the rear wall and form a third step, and

(c) said end structure including all of said exposed upper portions being folded against said front wall and adhesively secured thereto, and

(d) a second end structure similar to the reverse of the first end structure.

4. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being

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adherently bonded one to the other in overlapped relation and with the overlapped portion of said longitudinal edges disposed between said gussets, and said end of the tube including all of said overlapped portions and surfaces being folded against said front surface and selectively adhered in position to form said assembled bag end.

5. A gusseted multiwall bag formed from a continuous tube of plies of flexible sheet material, comprising:

(a) a tubular body composed of a plurality of said plies,

(i) the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation,

(ii) said tubular body being reversely creased along diametrically opposed portions to provide front and rear walls and a pair of gussets interposed therebetween on opposite sides of the axis of said tubular body, respectively,

(b) a first end structure including for each said gusset,

(i) said front wall,

(ii) a first gusset wall longitudinally connected to said front wall along a first longitudinal edge,

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Patent No. 3,650,460 Dated March 21, 1972

Inventor(s) Burke P. Lokey PAGE - 5

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

(iii) a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and

(iv) said rear wall longitudinally connected to said second gusset wall along a third longitudinal edge,

(v) all of the plies in the front wall being cut perpendicularly to and along the first longitudinal edge of each gusset to expose the upper portion of the first gusset wall thereof and form a first step,

(vi) all of the plies in the first gusset wall of each gusset being cut perpendicularly to and along the second longitudinal edge to expose the upper portion of the second gusset wall thereof and form a second step,

(vii) all of the plies in the second gusset wall of each gusset being cut perpendicularly to and along the third longitudinal edge to expose the upper portion of the rear wall and form a third step, and

(c) said adherently bonded and overlapped longitudinal edges of said plies being disposed between said pair of oppositely disposed gussets,

(d) said end structure including all of said exposed upper portions being folded against said front wall and adhesively secured thereto, and

(e) a second end structure similar to the reverse of the first end structure.

Signed and sealed this 18th day of July 1972.

ROBERT GOTTSCHALK
Commissioner of Patents

ATTEST:

ATTESTING OFFICER

Fig. 1

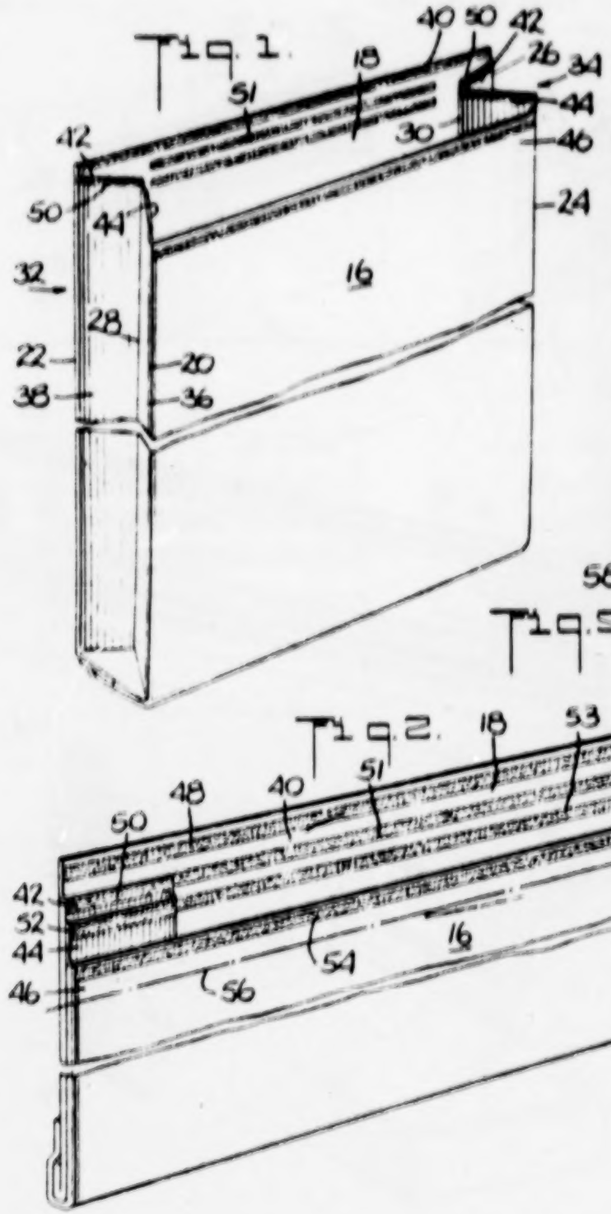


Fig. 5

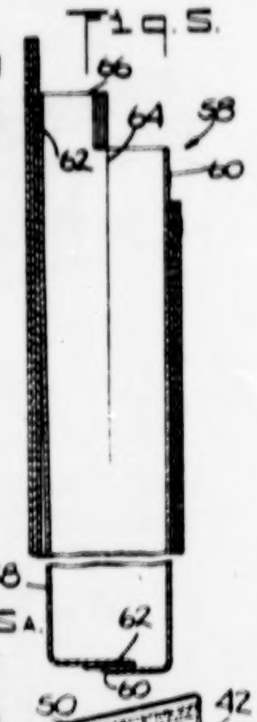


Fig. 5A

Fig. 2

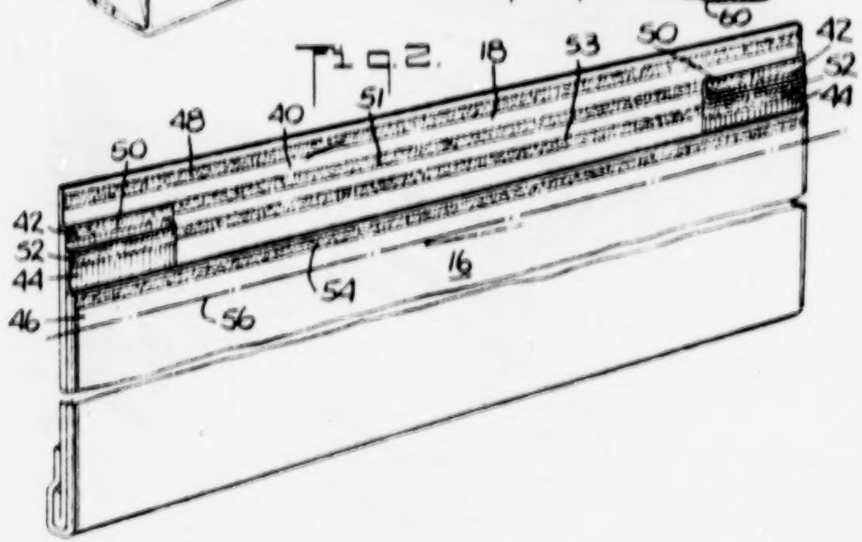


Fig. 3.

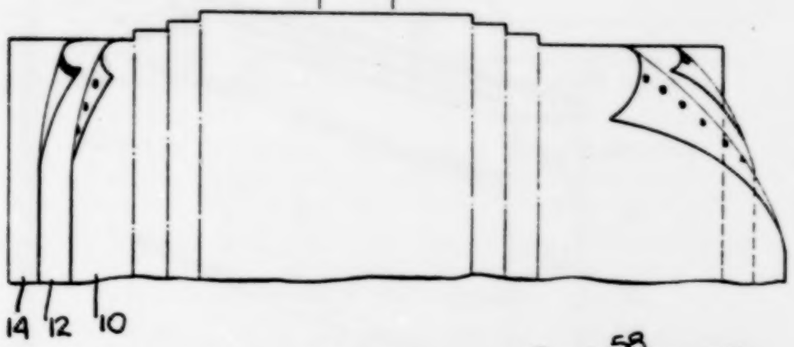


Fig. 4.

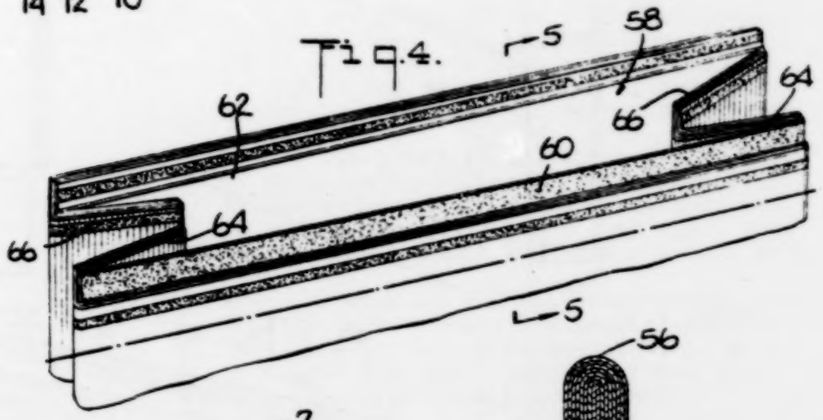


Fig. 8.

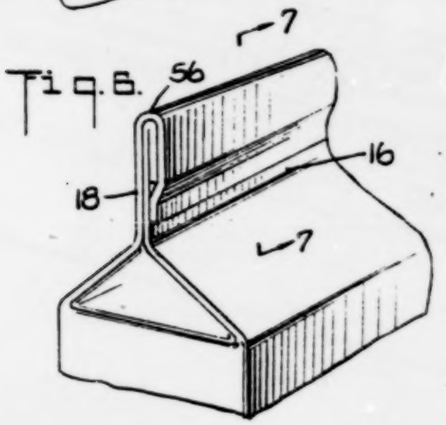


Fig. 7.

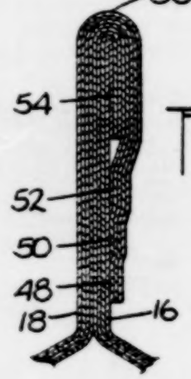


Fig. 8.

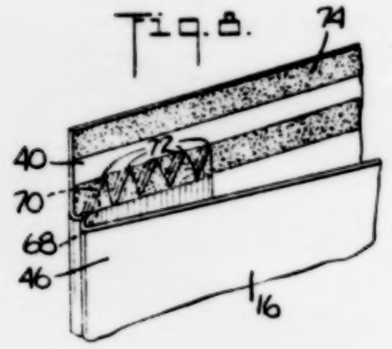


Fig. 9.

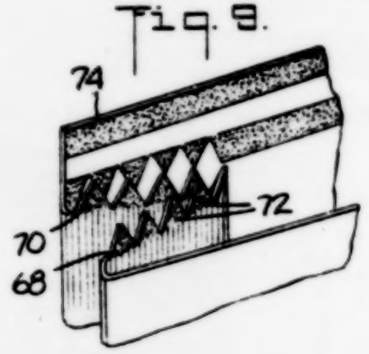


Fig. 11.

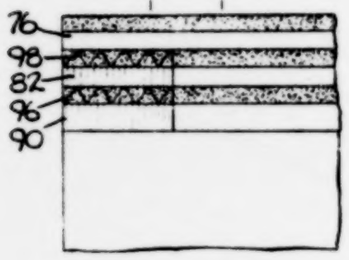


Fig. 10.

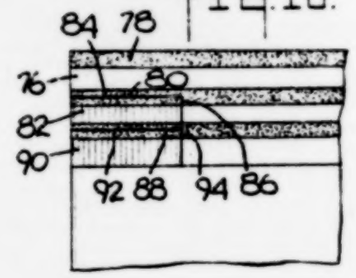


Fig. 12.

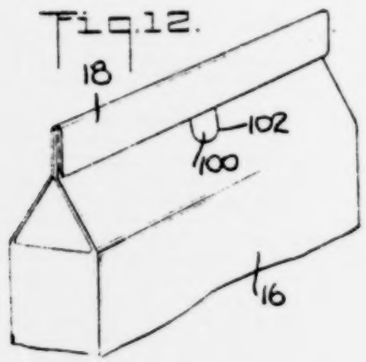
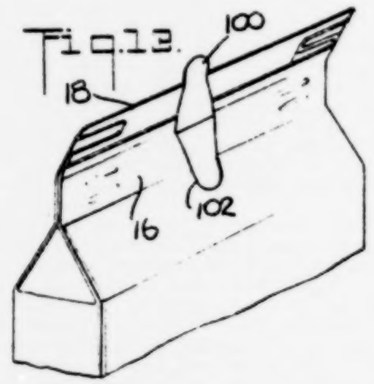


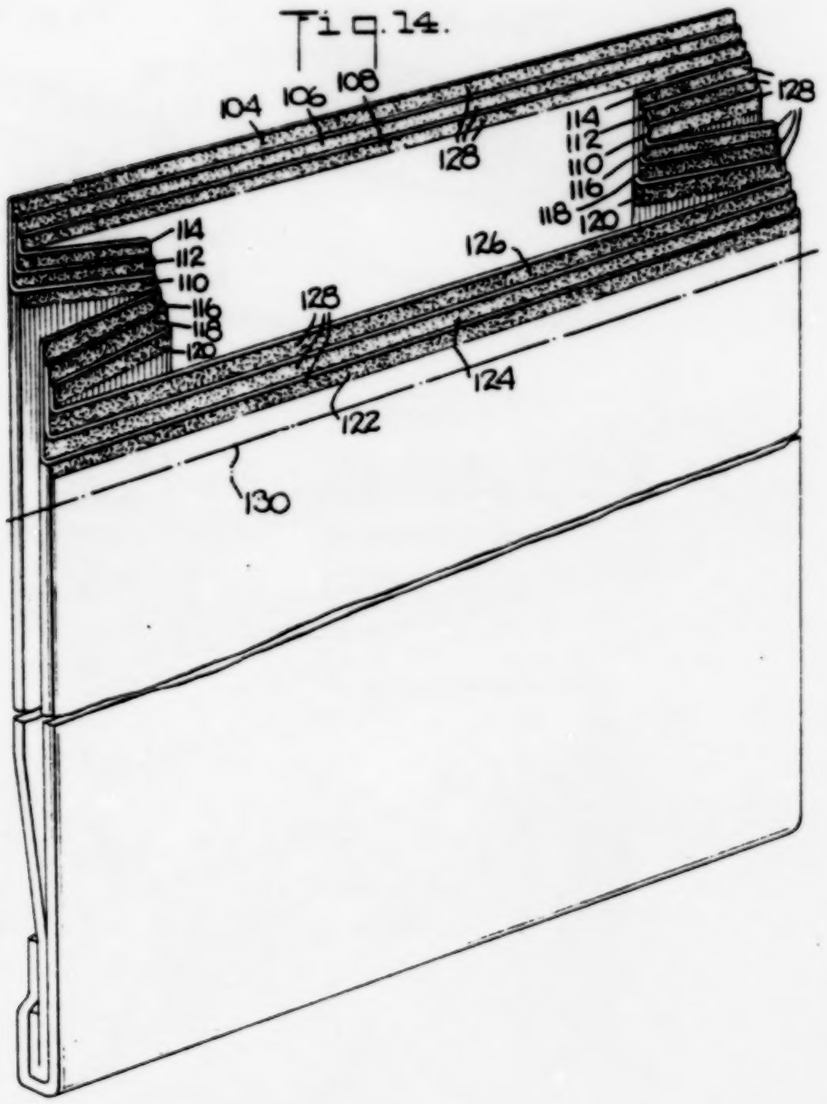
Fig. 13.



GUSSETED TYPE BAGS

Original Filed May 26, 1972 4 Sheets-Sheet 4

Fig. 14.



United States Patent Office Re. 28,317
Reissued Jan. 28, 1975

28,317

GUSSETED TYPE BAGS

John J. Goodrich, Pensacola, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Original No. 3,776,451, dated Dec. 4, 1973, Ser. No. 257,253, May 26, 1972, which is a division of application Ser. No. 467,416, June 28, 1965, which is a continuation-in-part of application Ser. No. 169,287, Jan. 29, 1962. Application for reissue Mar. 8, 1974, Ser. No. 449,489

Int. Cl. B65d 31/02, 33/02

U.S. Cl. 229—55

6 Claims

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

ABSTRACT OF THE DISCLOSURE

A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and stepped rear portion adapted to overlap said front portion within the overlapped area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, a bonding agent in a dormant state substantially covering said exposed surfaces at said end of the tube when said bag is in its assembled condition, and said bonding agent being reactivatable to close said bag end, the opposite end of said tube being the reverse of said one end and being folded over and adhered to a surface of said tube by means of said bonding agent, the innermost ply being preferably of a heat sealable material.

This application is a division of a copending application Ser. No. 467,416, filed June 28, 1965 (now U.S. Pat. No. 3,687,356)[,] *which is in turn a continuation-in-part of copending application Ser. No. 169,287, filed Jan. 29, 1962.*

The invention pertains to improvements in gusseted bags of the so-called pinch bottom type. Gusseted bags constructed in accordance with the invention may be fabricated from flexible sheet material, such as paper or the like and find wide use in protecting many different types of commodities during transit.

The invention pertains more particularly to a bag of tubular form comprising a plurality of contiguous plies of flexible sheet material wherein the bag has a front surface and an oppositely disposed rear surface which is adapted to overlap the front surface at one end of the tube when the bag is in its assembled condition. The bag is longitudinally and reversely creased along diametrically opposed portions in order to provide a pair of oppositely disposed gussets which are interposed between the front and rear surfaces. Each of the gussets has a front portion and a stepped rear portion which is adapted to overlap the front portion within the overlap area of the front and rear surfaces at the end of the tube when the bag is in its assembled condition.

The invention has as one of its aims, the provision of a new and improved gusseted type bag which has greatly superior closure strength and bonding characteristics as compared to practices of the prior art; and which controls contamination and insect infestation.

The invention provides as another of its aims, a bag closure which is of simple and inexpensive construction and which when completed positively seals the bag mouth against leakage and sifting even though the bags are roughly handled in transit. Such gusseted bag construction is accomplished with a minimum of bag material wastage.

Another feature of the invention resides in the provision of a new and improved gusseted type bag having a heat sealable inner ply of an impervious character which may be heat sealed without having to penetrate all of the plies of the bag with heat, and which is also of superior strength characteristics by means of overlapping the inside ply and thereby obtaining a better bond with additional strength. Such a structure is useful for retaining liquids or gases within or without the bag.

The invention provides as another of its aims, a gusseted type bag of the character aforesaid having a greatly simplified bag which may be simply closed and sealed in the packer's factory without the necessity of applying additional adhesive material and without excessive adhesive flowing over the wrong portions of the package, and which simplifies the handling and filling of the bag by the packer as well as simplifying the opening procedure for the ultimate consumer.

As still another feature of the present invention, a new and improved gusseted type bag is provided which has a more pleasing appearance and fewer wrinkles and which can still maintain a satisfactory marketable package even when there is slight deviation in the fold line as well as deviations in the bonding agent application.

According to one form of the invention the innermost ply of the gusseted type bag is fabricated from a heat sealable material. The rear surface of the innermost ply is cut substantially flush with the stepped rear portion of the other plies and the front surface of the innermost ply is cut substantially flush with the front portion of the other plies at the end of the tube when the bag is in its assembled condition.

The invention may be embodied in bags of single wall or multi-wall construction. As applied to multi-wall bags, further improvements of the invention are obtained by successively stepping the successive plies at the bag ends, and/or by similarly successively stepping the plies in only the gusseted portions of the bag. In this way, upon forming the bag closure by folding over the bag end and adherently bonding against one of the bag surfaces, all of the bag plies participate and contribute to the bonding action.

In accordance with a further aspect of the invention, a bonding agent in a dormant state is applied to the surfaces of the gusset portions as well as the front and rear surfaces at the end of the tube when the bag is in its assembled condition. The bonding agent is such that it may be reactivated to close the bag subsequent to a later bag filling operation. Further, in a modified form of the invention the bonding agent may be applied in transverse spaced strips on the face of the steps at the end of the tube. In still another form of the invention, the bonding agent is applied adjacent the upper edges of the steps so that portions of the gusset may be adhered to the rear surface of the tube. This is particularly advantageous since it eliminates the necessity for manually tucking in the gussets or corners of the bag, which would otherwise be required after the filling operation.

As another aspect of the invention the longitudinal width of the rear gusset exposed surfaces may be substantially less than the width of the rear wall exposed surface of the front gusset exposed surfaces.

Still another aspect of the present invention resides

in the provision of a new and improved gusseted type bag having a free floating polyethylene inside ply. This provides a moisture and air impervious inner ply which may expand or contract without encountering adverse tension or compression forces normally accompanying inter-bonded plies.

Also, according to the present invention a thumb notch may be provided in the outside ply of the front surface adjacent the top edge of the rear surface when the rear surface is folded over and adhered to the front surface.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of the invention. It is important, therefore, that the claims be regarded as including such equivalent constructions as do not depart from the spirit and scope of the invention. Several embodiments of the invention have been chosen for purposes of illustration and description, and are shown in the accompanying drawings, forming a part of the specifications, wherein:

FIG. 1 is a perspective view of a gusseted type pinch bottom bag constructed in accordance with the invention;

FIG. 2 is an enlarged perspective view showing details of the closure structure according to one form of the invention;

FIG. 3 is a plan view of a blank of flexible sheet material for fabrication into a multi-ply or multi-wall bag;

FIG. 4 is a fragmentary perspective view showing the closure portion of a gusseted type bag according to a modified form of the invention;

FIG. 5 is a longitudinal sectional view taken substantially along the lines indicated at 5—5 in FIG. 4;

FIG. 5a is a fragmentary view showing overlapping closure means of the innermost ply;

FIG. 6 is a fragmentary perspective view showing the closure portion of a gusseted type bag according to the invention after the exposed surfaces have been folded over in bonded condition;

FIG. 7 is a longitudinal sectional view taken along the line indicated at 7—7 in FIG. 6 and showing details of the bonding between the exposed surfaces and the face of the front wall of the bag;

FIG. 8 is a fragmentary perspective view showing a modified form of the gusset structure when the bag tube is in its flattened condition;

FIG. 9 is a fragmentary perspective view similar to FIG. 8, but showing the gusset structure after the package has been partially opened;

FIG. 10 is a fragmentary elevation showing another modified form of the gusset construction according to the invention;

FIG. 11 is a fragmentary elevation illustrating still another form of closure means according to the invention, wherein portions of the gussets are adhered to the rear surface;

FIG. 12 is a perspective view of a gusseted type bag showing the thumb notch opening means;

FIG. 13 is a perspective view similar to FIG. 12, but illustrating the operation of the thumb notch opening means; and

FIG. 14 is a perspective view of a modified form of the invention showing a multi-wall bag construction wherein the bag plies are successively stepped at the bag ends.

In the embodiment of the invention illustrated in FIGS. 1–3, the gusseted type bag is formed from a plurality of contiguous plies including plies **10**, **12** and **14**, FIG. 3, of flexible sheet material, such as kraft or other paper. The innermost ply may have a thin plastic coating of polyethylene or the like, applied to one or both surfaces thereof for moisture proofing. The plies **10**, **12** and **14** are longitudinally stepped as indicated in FIG. 3 so that when the blank is formed into a tubular member the joining of the respective longitudinal edges of each ply will be staggered. It is noted that only one end of the bag or tubular structure is shown, however, it is understood that the other end of the bag is constructed in a like complementary stepped manner.

As best seen in FIGS. 1 and 2, the bag has a front wall surface **16** and an oppositely disposed rear wall surface **18** adapted to overlap or extend above the front surface at one end of the tube when the bag is in its assembled condition. Referring to FIG. 1, the bag is longitudinally creased along fold lines **20**, **22**, **24** and **26**, and further, the bag is longitudinally and reversely creased diametrically opposed lines **28** and **30**, thereby forming a pair of oppositely disposed gussets indicated generally at **32** and **34** which are interposed between the front and rear walls or surfaces **16** and **18**.

Referring to FIGS. 4 and 5, the innermost ply designated generally at **58** has a front wall exposed surface **60** which extends beyond the other front wall plies and a rear wall exposed surface **62** which extends below the other rear wall plies. Preferably the front surface **60** is substantially flush with the front gusset exposed surfaces **64**, and the rear wall exposed surface **62** is flush with the rear gusset surfaces **66**. The innermost ply **58** is fabricated from heat seal material, and accordingly, the exposed surfaces thereof may be subjected to heat and thereby sealed without the necessity of the heat passing through as many plies as would be necessary if the inner ply was of the same relative height as the outer plies. Further, the inner ply **58** may be fabricated from many different types of materials porous and nonporous. For example, such materials include polyolefines such as polyethylene and polypropylene, polyamides such as nylon and polyesters such as polyalkylene derivatives of polycarboxylic acids especially polyethylene terephthalite. Further, the inner ply may be fabricated into a tubular member in a suitable manner such as that disclosed in copending U.S. Pat. application Ser. No. 430,417, filed Feb. 4, 1965 (now U.S. Pat. No. 3,399,096).

If the inner ply **58** is thermoplastic coated then, as best seen in FIG. 5a, the rear wall **62** of the inner ply **58** may be doubled over upon itself and the front wall surface **60** overlapped thereover in order to form a hermetic seal between the two thermoplastic surfaces.

Referring to FIGS. 8 and 9, there is illustrated a modified form of gusset construction. In this form a front gusset surface **68** and a rear gusset surface **70** are cut to substantially the same height or flush, and both are disposed within the overlapped area of the rear wall exposed surface **40** and the front wall exposed surface **46**. Further, according to this form of the invention, the top edge of the front and rear gusset exposed surfaces **68** and **70** are serrated or are provided with diamond or round notching as indicated at **72**. The first transverse strip of bonding agent **74** is applied across the rear wall exposed surface **40**, and a second transverse strip of bonding agent is applied across the top edge of the gussets including the serrated edge portion **72**, thereby adhering both the front and back gussets **68** and **70** to the rear wall **40** at the top of the bag. This has the advantage of preventing leakage of packaging material at the outer extremities of the gussets, and also facilitates closure of the bag after filling with packaging material since it eliminates the necessity for manually tucking in the corners of the gussets which would otherwise be required.

Referring to FIG. 10, there is illustrated a modified form of gusset arrangement wherein three strips of preapplied bonding agent in a dormant state are applied to the rear wall exposed surface, to the rear gusset exposed surfaces and to the front gusset exposed surfaces respectively. That is, one strip of bonding agent **78** is applied transversely of the bag across the rear wall exposed surface **76**; a second strip **80** of bonding agent is applied to the upper edge of the rear gusset exposed surface **82** so that a portion of the bonding agent appears on the top edge of the rear gusset exposed surface **82** and a portion of the bonding agent appears on the adjacent portion of the rear wall exposed surface **76**, thereby bonding the two surfaces together along the line **84** as well as along the line **86**; and a third strip **88** of bonding agent is applied along the top edge of the front gusset exposed surface **90** in an overlapping manner as seen in FIG. 10 so that the front gusset exposed surface **90** is bonded to the rear gusset exposed surface **82** along the line **92** and the front gusset surface **90** is also bonded to the rear wall exposed surface **76** along the line **94**. As pointed out above, bonding of the gussets one to the other and to the rear wall serves to prevent leakage of the packaging material at the extremities of gussets and facilitates closure of the bag after filling with packaging material.

Referring next to FIG. 11, there is illustrated a further modification of the invention. According to this embodiment, the front gusset exposed surface is stepped below the rear gusset exposed surface and the upper edges of both gusset surfaces are provided with a serrated or sawtooth type contoured edge as indicated at **96** and **98**, respectively. This construction provides a longer effective linear edge for providing better bonding characteristics between the front gusset **90** and the rear gusset **82** as well as the rear gusset **82** and the rear wall exposed surface **76**.

Referring to FIGS. 12 and 13, there is shown new and improved means for opening a gusseted type bag. A thumb notch **100** is formed in the outermost ply of a multi-ply bag by an interrupted line of slit **102** therein disposed adjacent the top edge of the rear wall **18** when the rear wall is folded over in sealed condition. Since the aforementioned strips of adhesive material are adhered to the outermost ply of the front wall **16**, the thumb notch **100** tends to rip the outermost ply of the front wall **16** underneath the folded over portion of the back wall **18**, and thereby provides a thumb grip to grasp the so-folded over back wall that it can be easily lifted to open the bag as shown in FIG. **13**.

Referring to the multi-wall bag constructions, the bag plies may be successively stepped at the bag ends to provide additional adherence on forming the bag closure. Thus, referring to FIG. 14, the rear wall exposed surface comprises a plurality of plies which may, for example, include three plies including an outside ply **104**, a second ply **106** and an inside ply **108**. The rear gusset exposed surfaces include an outside or first ply **110**, a second ply **112** and an inside or third ply **114**. The front gusset exposed surfaces include plies **116**, **118** and **120**. The front wall exposed surface includes a first ply **122**, a second ply **124** and a third ply or inside ply **126**. It will be appreciated that each of the plies in each of the exposed surfaces has a bonding agent in a dormant state applied thereto as at **128**, FIG. 14. The bonding agent is reactivatable to permanently close the bag subsequent to a later bag filling operation. In this way, portions of all the bag plies in all surfaces including the gusset areas, upon forming the bag closure by folding over along the fold line **130** and reactivating the bonding agent, are adherently bonded to the bag surface.

It will be understood that various changes in the details, materials and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

What is claimed is:

1. A bag of tubular form comprising a plurality of at least three contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having an exposed front portion and an exposed rear portion which is stepped above said front portion and adapted to overlap said front portion within the overlapped area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, at least some of the bag plies being stepped in said front and rear surface portions to provide exposed portions thereof, a heat reactive bonding agent in a dormant state substantially covering said exposed gusset portions and front and rear surface portions at said end of the tube when said bag is in its assembled condition, and said bonding agent being reactivatable to close said bag end, the opposite end of said tube being the reverse of said one end and being folded over and adhered to a surface of said tube by means of said bonding agent.

2. A bag according to claim 1 having an inner ply composed of a moisture impervious material.

3. A bag according to claim 1 in which at least the inner surface of the innermost ply of which is provided with a moisture resistant surface.

4. A bag according to claim 1, the innermost ply of which is comprised of a heat-sealable plastic material.

5. A bag according to claim 4 wherein the opposed walls of said innermost ply are heat sealed to one another at said folded over end of said bag.

6. A bag according to claim 5 wherein said heat sealed end of said innermost ply is freely displaceable with respect to the remaining plies at said folded over end of said bag.

References Cited

The following references, cited by the Examiner, are of record in the patented file of this patent or the original patent.

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WILLIAM I. PRICE, Primary Examiner

S. P. GARBE, Assistant Examiner

U.S. Cl. X.R.

229—57, 62

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. 28,317
DATED January 28, 1975
INVENTOR(S) J. J. Goodrich

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below

Column 4, between lines 24 and 25, insert the following:

--Each of the gussets 32 and 34 have a front portion 36 and a stepped rear portion 38, as seen in FIG. 1. The rear portion 38 is adapted to overlap the front portion 36 within the overlapped area of the front and rear wall surfaces 16 and 18, thereby forming a rear wall exposed surface 40, rear gusset exposed surfaces 42, front gusset exposed surfaces 44, and a front wall exposed surface 46.

Still referring to FIGS. 1 and 2, there is shown a plurality of spaced transversely extending strips of a bonding agent in a dormant state. The bonding agent is a pre-applied type of thermoplastic resin adhesive of any suitable type. While such adhesive could be applied to substantially cover all of the exposed surfaces at the end of the bag, it is preferable that it be applied in horizontally, transversely disposed, spaced strips. As seen in FIGS. 1 and 2, a first strip 48 is applied on the rear wall exposed surface 40 and extends substantially across the width of the bag. A second strip 50 extends across the rear gusset exposed surfaces 42 and preferably across the adjacent portion of the rear wall exposed surface as at 51. Next, a third strip 52 extends across the front gusset exposed surfaces 44 and preferably across the adjacent portion 53 of the rear wall exposed surface as at 53, and a fourth strip of bonding agent 54 is applied to the front wall exposed surface 46. When packaging certain materials, the strip of bonding agent 54 may be dispensed with, but when packaging other commodities the bonding agent strip 54 serves a very important function. That is, the latter strip serves to make the bag contamination or insect proof, otherwise there is the possibility that insects may penetrate through the corners of the bag thereby gaining access to the interior thereof. Moreover, the strip of bonding agent 54 serves as an added measure of protection in the event that the application apparatus of the strips of bonding agent 48, 50 and 52 misfires or skips a spot, the package would

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. Re. 28,317 Dated January 28, 1975

Inventor(s) J. J. Goodrich

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

nevertheless be satisfactorily sealed.

As best seen in FIGS. 6 and 7, closure of the package is accomplished by folding the end along the fold crease 56, thus to adhere the bag end to the outer ply of the front surface 16. As seen in FIG. 7, each of the adhesive strips 48, 50, 52 and 54 are in direct contact with the front surface. This is why applicants' bag is of substantially superior strength as compared to bags of the prior art.

Normally the bags are shipped to the packers in the condition as shown in FIG. 2 with the bonding medium already applied. The packer opens the top of the bag and inserts a filling spout therein for filling the bag with a desired commodity. Thereafter, the operators tuck-in the gusset portions and fold over the end of the bag along crease line 56, FIG. 2. Normally heat and pressure are applied to reactivate the preapplied bonding agent to thereby permanently close the bag. This may be accomplished by means of hot pressure bars or hot rollers, as desired. Also, with certain types of bonding agents, a hot air blast may be employed to reactivate the bonding agent, or in still other instances the bonding agent may require chemical reactivation. It will be appreciated that with the aforementioned type of preapplied bonding agent, the packer is not troubled with the problem of applying adhesive to the bag in his plant. This may be particularly desirable when packaging comestibles wherein adhesive may accidently become intermingled with the contents of the package.--

Signed and sealed this 27th day of May 1975.

C. Marshall Dann

C. MARSHALL DANN
Commissioner of Patents
and Trademarks

ATTEST:
Ruth C. Mason
TESTING OFFICER

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
U.S. GOVERNMENT PRINTING OFFICE 969-930

Jan. 28, 1975 J J GOODRICH Re. 28,318

GUSSETED TYPE BAGS

Original Filed June 28, 1965 4 Sheets-Sheet 1

Fig. 1.

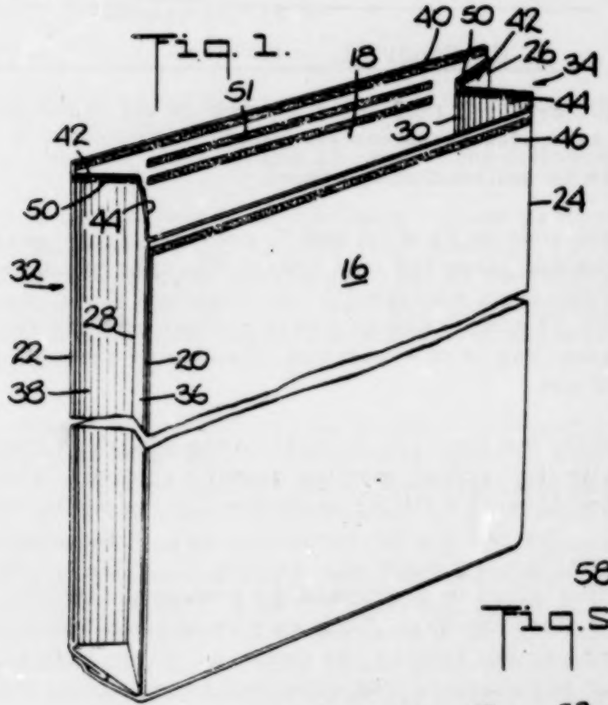


Fig. 5.

Fig. 5A.

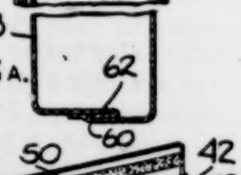
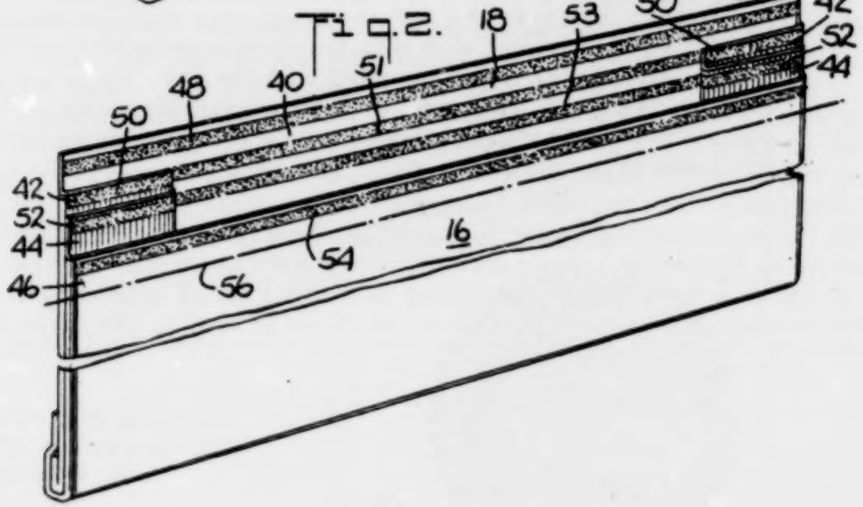


Fig. 2.



Jan. 28, 1975 J. J. GOODRICH Re. 28,318

GUSSETED TYPE BAGS

Original Filed June 28, 1965 4 Sheets-Sheet 2

Fig. 3.

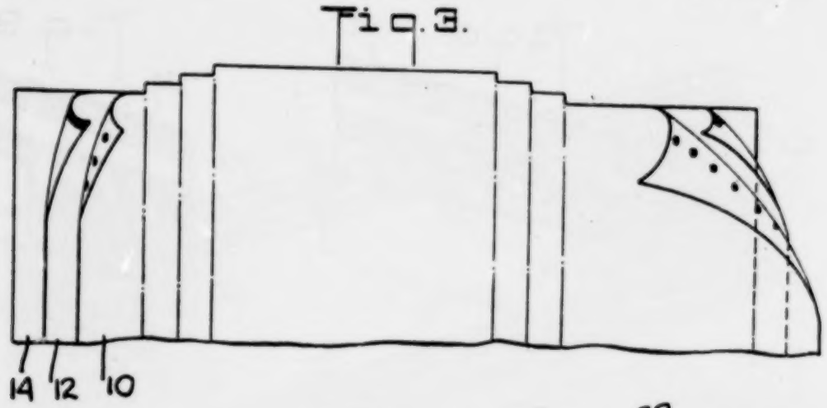


Fig. 4.

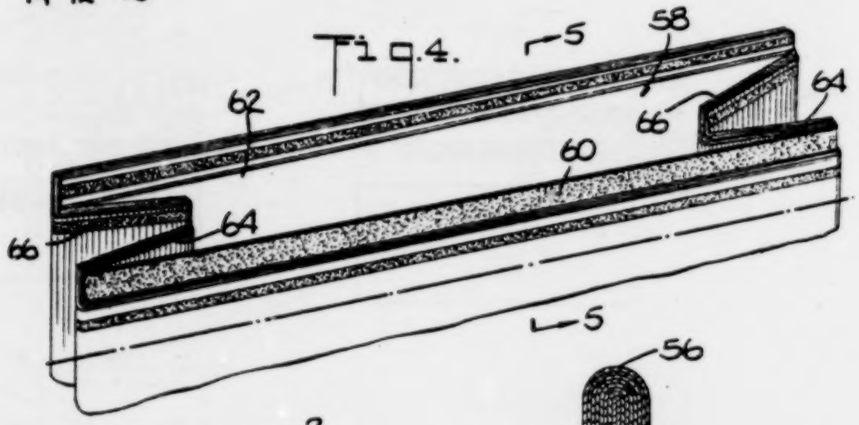


Fig. 8.

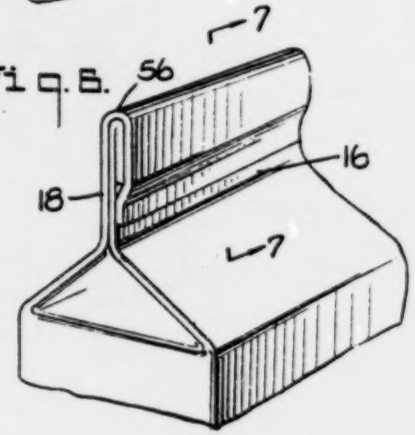


Fig. 7.

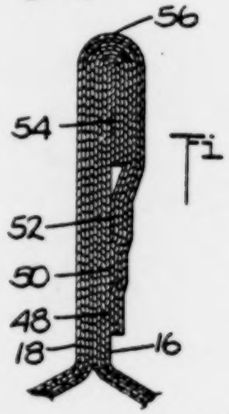


Fig. 8.

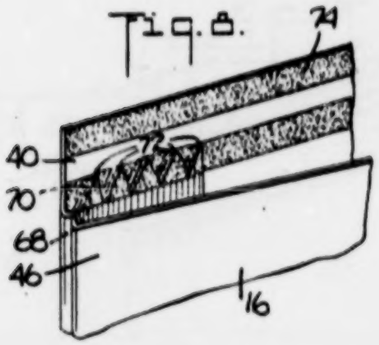


Fig. 9.

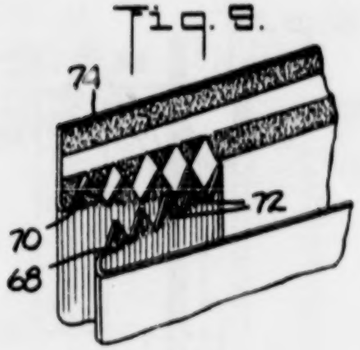


Fig. 11.

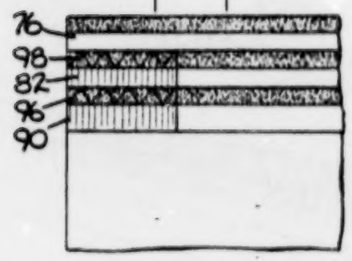


Fig. 10.

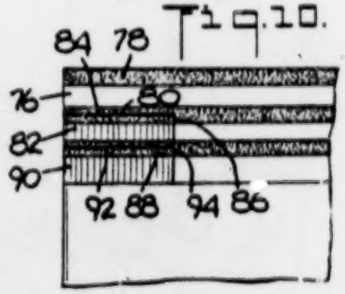


Fig. 12.

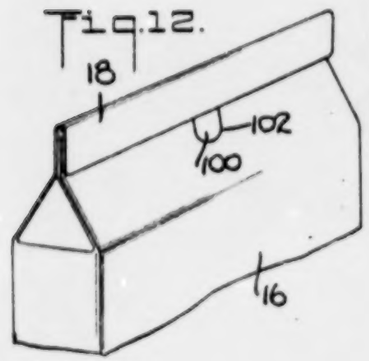


Fig. 13.

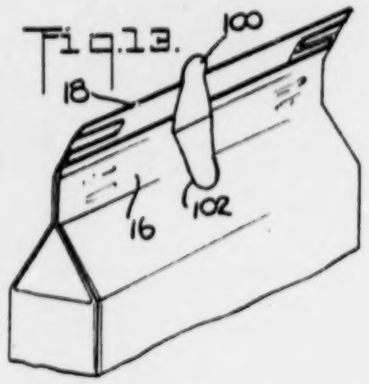
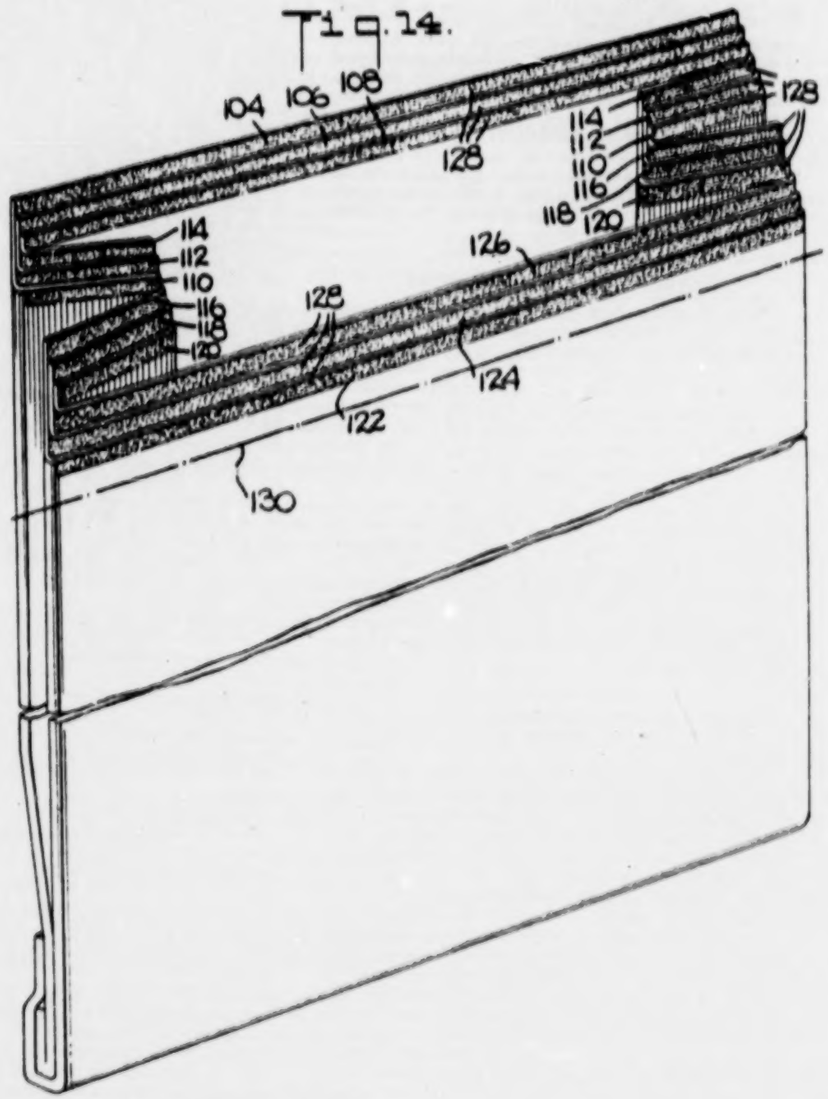


Fig. 14.



United States Patent Office

Re. 28,318
Reissued Jan. 28, 1975

28,318

GUSSETED TYPE BAGS

John J. Goodrich, Pensacola, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Original No. 3,687,356, dated Aug. 29, 1972, Ser. No. 467,416, June 28, 1965, which is a continuation-in-part of abandoned application Ser. No. 169,287, Jan. 29, 1962. Application for reissue Mar. 8, 1974, Ser. No. 449,490

Int. Cl. B65d 31/02

U.S. Cl. 229—55

4 Claims

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

ABSTRACT OF THE DISCLOSURE

A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progressively and successively one beyond another at each surface portion at said bag end, and a bonding agent in a dormant state being applied on each surface portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation.

This application is a continuation-in-part of my copending application Ser. No. 169,287, filed Jan. 29, 1962, now abandoned.

The invention pertains to improvements in gusseted bags of the so-called pinch bottom type. Gusseted bags constructed in accordance with the invention may be fabricated from flexible sheet material, such as paper or the like and find wide use in protecting many different types of commodities during transit.

The invention pertains more particularly to a bag of tubular form comprising a plurality of contiguous plies of flexible sheet material wherein the bag has a front surface and an oppositely disposed rear surface which is adapted to overlap the front surface at one end of the tube when the bag is in its assembled condition. The bag is longitudinally and reversely creased along diametrically opposed portions in order to provide a pair of oppositely disposed gussets which are interposed between the front and rear surfaces. Each of the gussets has a front portion and a stepped rear portion which is adapted to overlap the front portion within the overlap area of the front and rear surfaces at the end of the tube when the bag is in its assembled condition.

The invention has as one of its aims, the provision of a new and improved gusseted type bag which has greatly superior closure strength and bonding characteristics as compared to practices of the prior art; and which controls contamination and insect infestation.

The invention provides as another of its aims, a bag closure which is of simple and inexpensive construction and which when completed positively seals the bag mouth against leakage and sifting even though the bags are roughly handled in transit. Such gusseted bag construction is accomplished with a minimum of bag material wastage.

Another feature of the invention resides in the provision of a new and improved gusseted type bag having a heat sealable inner ply of an impervious character which may be heat sealed without having to penetrate all of the plies of the bag with heat, and which is also of superior strength characteristics by means of overlapping the inside ply and thereby obtaining a better bond with additional strength. Such a structure is useful for retaining liquids or gases within or without the bag.

The invention provides as another of its aims, a gusseted type bag of the character aforesaid having a greatly simplified bag which may be simply closed and sealed in the packer's factory without the necessity of applying additional adhesive material and without excessive adhesive flowing over the wrong portions of the package, and which simplifies the handling and filling of the bag by the packer as well as simplifying the opening procedure for the ultimate consumer.

As still another feature of the present invention, a new and improved gusseted type bag is provided which has a more pleasing appearance and fewer wrinkles and which can still maintain a satisfactory marketable package even when there is slight deviation in the fold line as well as deviations in the bonding agent application.

According to one form of the invention the innermost ply of the gusseted type bag is fabricated from a heat sealable material. The rear surface of the innermost ply is cut substantially flush with the stepped rear portion of the other plies and the front surface of the innermost ply is cut substantially flush with the front portion of the other plies at the end of the tube when the bag is in its assembled condition.

The invention may be embodied in bags of single wall or multi-wall construction. As applied to multi-wall bags, further improvements of the invention are obtained by successively stepping the successive plies at the bag ends, and/or by similarly successively stepping the plies in only the gusseted portions of the bag. In this way, upon forming the bag closure by folding over the bag end and adherently bonding against one of the bag surfaces, all of the bag plies participate and contribute to the bonding action.

In accordance with a further aspect of the invention, a bonding agent in a dormant state is applied to the surfaces of the gusset portions as well as the front and rear surfaces at the end of the tube when the bag is in its assembled condition. The bonding agent is such that it may be reactivated to close the bag subsequent to a later bag filling operation. Further, in a modified form of the invention the bonding agent may be applied in transverse spaced strips on the face of the steps at the end of the tube. In still another form of the invention, the bonding agent is applied adjacent the upper edges of the steps so that portions of the gusset may be adhered to the rear surface of the tube. This is particularly advantageous since it eliminates the necessity for manually tucking in the gussets or corners of the bag, which would otherwise be required after the filling operation.

As another aspect of the invention the longitudinal width of the rear gusset exposed surfaces may be substantially less than the width of the rear wall exposed surface or the front gusset exposed surfaces.

Still another aspect of the present invention resides in the provision of a new and improved gusseted type bag having a free floating polyethylene inside ply. This provides a moisture and air impervious inner ply which may expand or contract without encountering adverse tension or compression forces normally accompanying interbonded plies.

Also, according to the present invention a thumb notch may be provided in the outside ply of the front surface adjacent the top edge of the rear surface when the rear surface is folded over and adhered to the front surface.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of the invention. It is important, therefore, that the claims be regarded as including such equivalent constructions as do not depart from the spirit and scope of the invention. Several embodiments of the invention have been chosen for purposes of illustration and description, and are shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a perspective view of a gusseted type pinch bottom bag constructed in accordance with the invention;

FIG. 2 is an enlarged perspective view showing details of the closure structure according to one form of the invention;

FIG. 3 is a plan view of a blank of flexible sheet material for fabrication into a multi-ply or multi-wall bag;

FIG. 4 is a fragmentary perspective view showing the closure portion of a gusseted type bag according to a modified form of the invention;

FIG. 5 is a longitudinal sectional view taken substantially along the lines indicated at 5—5 in FIG. 4;

FIG. 5a is a fragmentary view showing overlapping closure means of the innermost ply;

FIG. 6 is a fragmentary perspective view showing the closure portion of a gusseted type bag according to the invention after the exposed surfaces have been folded over in bonded condition;

FIG. 7 is a longitudinal sectional view taken along the line indicated at 7—7 in FIG. 6 and showing details of the bonding between the exposed surfaces and the face of the front wall of the bag;

FIG. 8 is a fragmentary perspective view showing a modified form of gusset structure when the bag tube is in its flattened condition;

FIG. 9 is a fragmentary perspective view similar to FIG. 8, but showing the gusset structure after the package has been partially opened;

FIG. 10 is a fragmentary elevation showing another modified form of gusset construction according to the invention;

FIG. 11 is a fragmentary elevation illustrating still another form of closure means according to the invention, wherein portions of the gussets are adhered to the rear surface;

FIG. 12 is a perspective view of a gusseted type bag showing the thumb notch opening means;

FIG. 13 is a perspective view similar to FIG. 12, but illustrating the operation of the thumb notch opening means; and

FIG. 14 is a perspective view of a modified form of the invention showing a multi-wall bag construction wherein the bag plies are successively stepped at the bag ends.

In the embodiment of the invention illustrated in FIGS. 1–3, the gusseted type bag is formed from a single ply 10, FIG. 1, or a plurality of contiguous plies including plies 10, 12 and 14, FIG. 3, of flexible sheet material, such as kraft or other paper. The innermost ply may have a thin plastic coating of polyethylene or the like, applied to one or both surfaces thereof for moisture proofing. Preferably when a plurality of plies are used, the plies 10, 12 and 14 are longitudinally stepped as indicated in FIG. 3 so that when the blank is formed into a tubular

member the joining of the respective longitudinal edges of each ply will be staggered. It is noted that only one end of the bag or tubular structure is shown, however, it is understood that the other end of the bag is constructed in a like complimentary stepped manner.

As best seen in FIGS. 1 and 2, the bag has a front wall surface 16 and an oppositely disposed rear wall surface 18 adapted to overlap or extend above the front surface at one end of the tube when the bag is in its assembled condition. Referring to FIG. 1, the bag is longitudinally creased along fold lines 20, 22, 24 and 26, and further, the bag is longitudinally and reversely creased along diametrically opposed lines 28 and 30, thereby forming a pair of oppositely disposed gussets indicated generally at 32 and 34 which are interposed between the front and rear walls or surfaces 16 and 18.

Each of the gussets 32 and 34 have a front portion 36 and a stepped rear portion 38, as seen in FIG. 1. The rear portion 38 is adapted to overlap the front portion 36 within the overlapped area of the front and rear wall surfaces 16 and 18, thereby forming a rear wall exposed surface 40, rear gusset exposed surfaces 42, front gusset exposed surfaces 44, and a front wall exposed surface 46.

Still referring to FIGS. 1 and 2, there is shown a plurality of spaced transversely extending strips of a bonding agent in a dormant state. The bonding agent is a preapplied type of thermoplastic resin adhesive of any suitable type. While such adhesive could be applied to substantially cover all of the exposed surfaces at the end of the bag, it is preferable that it be applied in horizontally, transversely disposed, spaced strips. As seen in FIGS. 1 and 2, a first strip 48 is applied on the rear wall exposed surface 40 and extends substantially across the width of the bag. A second strip 50 extends across the rear gusset exposed surfaces 42 and preferably across the adjacent portion of the rear wall exposed surface as at 51. Next, a third strip 52 extends across the front gusset exposed surfaces 44 and preferably across the adjacent portion 53 of the rear wall exposed surface as at 53, and a fourth strip of bonding agent 54 is applied to the front wall exposed surface 46. When packaging certain materials, the strip of bonding agent 54 may be dispensed with, but when packaging other commodities the bonding agent strip 54 serves a very important function. That is, the latter strip serves to make the bag contamination or insect proof, otherwise there is the possibility that insects may penetrate through the corners of the bag thereby gaining access to the interior thereof. Moreover, the strip of bonding agent 54 serves as an added measure of protection in the event that the application apparatus of the strips of bonding agent 48, 50 and 52 misfires or skips a spot, the package would nevertheless be satisfactorily sealed.

As best seen in FIGS. 6 and 7, closure of the package is accomplished by folding the end along the fold crease 56, thus to adhere the bag end to the outer ply of the front surface 16. As seen in FIG. 7, each of the adhesive strips 48, 50, 52 and 54 are in direct contact with the front surface. This is why applicant's bag is of substantially superior strength as compared to bags of the prior art.

Normally the bags are shipped to the packers in the condition as shown in FIG. 2 with the bonding medium already applied. The packer opens the top of the bag and inserts a filling spout therein for filling the bag with a desired commodity. Thereafter, the operators tuck-in the gusset portions and fold over the end of the bag along crease line 56, FIG. 2. Normally heat and pressure are applied to reactivate the preapplied bonding agent to thereby permanently close the bag. This may be accomplished by means of hot pressure bars or hot rollers, as desired. Also, with certain types of bonding agents, a hot air blast may be employed to reactivate the bonding agent, or in still other instances the bonding agent may require chemical reactivation. It will be appreciated that with the aforementioned type of preapplied bonding agent, the

packer is not troubled with the problem of applying adhesive to the bag in his plant. This may be particularly desirable when packaging comestibles wherein adhesive may accidentally become intermingled with the contents of the package.

Referring to FIGS. 4 and 5, the innermost ply designated generally at 58 has a front wall exposed surface 60 which extends beyond the other front wall plies and a rear wall exposed surface 62 which extends below the other rear wall plies. Preferably the front surface 60 is substantially flush with the front gusset exposed surfaces 64, and the rear wall exposed surface 62 is flush with the rear gusset surfaces 66. The innermost ply 58 is fabricated from heat seal material, and accordingly, the exposed surfaces thereof may be subjected to heat and thereby sealed without the necessity of the heat passing through as many plies as would be necessary if the inner ply was of the same relative height as the outer plies. Further, the inner ply 58 may be fabricated from many different types of materials porous and non-porous. For example, such materials include polyolefines such as polyethylene and polypropylene, polyamides such as nylon and polyesters such as polyalkylene derivatives of polycarboxylic acids especially polyethylene terephthalate. Further, the inner ply may be fabricated into a tubular member in a suitable manner such as that disclosed in U.S. Pat. No. 3,399,096, issued on Aug. 27, 1968.

If the inner ply 58 is thermoplastic coated then, as best seen in FIG. 5a, the rear wall 62 of the inner ply 58 may be doubled over upon itself and the front wall surface 60 overlapped thereover in order to form a hermetic seal between the two thermoplastic surfaces.

Referring to FIGS. 8 and 9, there is illustrated a modified form of gusset construction. In this form a front gusset surface 68 and a rear gusset surface 70 are cut to substantially the same height or flush, and both are disposed with the overlapped area of the rear wall exposed surface 40 and the front wall exposed surface 46. Further, according to this form of the invention, the top edge of the front and rear gusset exposed surfaces 68 and 70 are serrated or are provided with diamond or round notching as indicated at 72. The first transverse strip of bonding agent 74 is applied across the rear wall exposed surface 40, and a second transverse strip of bonding agent is applied across the top edge of the gussets including the serrated edge portion 72, thereby adhering both the front and back gussets 68 and 70 to the rear wall 40 at the top of the bag. This has the advantage of preventing leakage of packaging material at the outer extremities of the gussets, and also facilitates closure of the bag after filling with packaging material since it eliminates the necessity for manually tucking in the corners of the gussets which would otherwise be required.

Referring to FIG. 10, there is illustrated a modified form of gusset arrangement wherein three strips of preapplied bonding agent in a dormant state are applied to the rear wall exposed surface, to the rear gusset exposed surfaces and to the front gusset exposed surfaces respectively. That is, one strip of bonding agent 78 is applied transversely of the bag across the rear wall exposed surface 76; a second strip 80 of bonding agent is applied to the upper edge of the rear gusset exposed surface 82 so that a portion of the bonding agent appears on the top edge of the rear gusset exposed surface 82 and a portion of the bonding agent appears on the adjacent portion of the rear wall exposed surface 76, thereby bonding the two surfaces together along the line 84 as well as along the line 86; and a third strip 88 of bonding agent is applied along the top edge of the front gusset exposed surface 90 in an overlapping manner as seen in FIG. 10 so that the front gusset exposed surface 90 is bonded to the rear gusset exposed surface 82 along the line 92 and the front gusset surface 90 is also bonded to the rear wall exposed surface 76 along the line 94. As pointed out above, bonding of the gussets one to the other and to the rear wall serves to prevent leakage of the packaging material at the extremities of gussets and facilitates closure of the bag after filling with packaging material.

Referring next to FIG. 11, there is illustrated a further modification of the invention. According to this embodiment, the front gusset exposed surface is stepped below the rear gusset exposed surface and the upper edges of both gusset surfaces are provided with a serrated or sawtooth type contoured edge as indicated at 96 and 98, respectively. This construction provides a longer effective linear edge for providing better bonding characteristics between the front gusset 90 and the rear gusset 82 as well as the rear gusset 82 and the rear wall exposed surface 76.

Referring to FIGS. 12 and 13, there is shown new and improved means for opening a gusseted type bag. A thumb notch 100 is formed in the outermost ply of a multi-ply bag by an interrupted line of slit 102 therein disposed adacent the top edge of the rear wall 18 when the rear wall is folded over in sealed condition. Since the aforementioned strips of adhesive material are adhered to the outermost ply of the front wall 16, the thumb notch 100 tends to rip the outermost ply of the front wall 16 underneath the folded over portion of the back wall 18, and thereby provides a thumb grip to grasp the so-folded over back wall that it can be easily lifted to open the bag as shown in FIG. 13.

Referring to the multi-wall bag constructions, the bag plies may be successively stepped at the bag ends to provide additional adherence on forming the bag closure. Thus, referring to FIG. 14, the rear wall exposed surface comprises a plurality of plies which may, for example, include three plies including an outside ply 104, a second ply 106 and an inside ply 108. The rear gusset exposed surfaces include an outside or first ply 110, a second ply 112 and an inside or third ply 114. The front gusset exposed surfaces include plies 116, 118 and 120. The front wall exposed surface includes a first ply 122, a second ply 124 and a third ply or inside ply 126. It will be appreciated that each of the plies in each of the exposed surfaces has a bonding agent in a dormant state applied thereto as at 128, FIG. 14. The bonding agent is reactivatable to permanently close the bag subsequent to a later bag filling operation. In this way, portions of all the bag plies in all surfaces including the gusset areas, upon forming the bag closure by folding over along the fold line 130 and reactivating the bonding agent, are adherently bonded to the bag surface.

It will be understood that various changes in the details, materials and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

What is claimed is:

1. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front surface within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progressively and successively one beyond another at each surface portion and each gusset portion at said bag end, and a bonding agent in a dormant state being applied on each surface portion and each gusset portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation.

2. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front surface within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled and successively one beyond another at each surface portion and each gusset portion at said bag end, and a bonding agent in a dormant state being applied on each surface portion and each gusset portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation, the opposite end of said bag being the reverse of and complementary to that of said one end, the overlap portion thereof being folded over and adhered to the rear surface of said bag to close said bag end, the innermost ply having bonded thereto a coating layer of a heat sealable thermoplastic material, and the opposed surfaces of said layer being heat sealed together adjacent said closed bag end.

3. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front surface within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progessively and successively one beyond another at each surface portion and each gusset portion at said bag end, and a bonding agent is a dormant state being applied on each surface portion and each gusset portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation, and said bag plies being composed of paper and said innermost paper ply having bonded thereto a moisture impervious coating layer.

4. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front surface within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progressively and successively one beyond another at each surface portion and each gusset portion at said bag end, and a bonding agent in a dormant state being applied on each surface portion and each gusset portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation, the innermost ply of said bag being composed of a heat sealable thermoplastic material and the remaining plies being made of paper, opposed portions of said plastic ply being heat sealed together transversely of said bag at a closed end thereof.

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3,203,620	8/1965	Becker	229—57
2,871,771	2/1959	Mercer	93—35 R
426,607	4/1890	Single	229—58
3,203,323	8/1965	Adams	93—35 R
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2,975,955	3/1961	McCurry	229—55

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288,177	3/1965	Netherlands	229—55

WILLIAM I. PRICE, Primary Examiner

S. P. GARBE, Assistant Examiner

U.S. Cl. X.R.

229—58, 62

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : Re. 28,318

DATED : Jan. 28, 1975

INVENTOR(S) : J. J. Goodrich

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 7, after line 12, insert --condition, and with the bag plies extending progressively--

Column 7, line 41, delete "is" and substitute --in--

Column 7, line 42, delete "qusset" and substitute --gusset--

Column 7, line 44, delete "and"

Signed and Sealed this

thirteenth Day of *April* 1976

Attest:

Ruth C. Mason

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks

In the

United States Court of Appeals

For The Seventh Circuit

No. 76-1044

ST. REGIS PAPER COMPANY,
Plaintiff-Appellee,

v.

BEMIS COMPANY, INC.,
Defendant-Appellant.

Appeal From the United States District Court
for the Southern District of Illinois
Northern Division

PETITION BY PLAINTIFF-APPELLEE FOR REHEARING UNDER RULE 40, F.R.A.P., TO THE SUGGESTION OF REHEARING EN BANC UNDER RULE 35(a), F.R.A.P.

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IN THE

United States Court of Appeals

FOR THE SEVENTH CIRCUIT

No. 76-1044

ST. REGIS PAPER COMPANY,
Plaintiff-Appellee,

v.

BEMIS COMPANY, INC.,
Defendant-Appellant.

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF ILLINOIS
NORTHERN DIVISION

Petition By Plaintiff-Appellee For Rehearing Under Rule 40, F.R.A.P. With The Suggestion Of Rehearing En Banc Under Rule 35(a), F.R.A.P.

Plaintiff-Appellee, St. Regis Paper Company, in the above appeal, hereby petitions for a rehearing of this Court's decision of February 3, 1977 under Rule 40, F. R. A. P., with the suggestion of a rehearing en banc under Rule 35(a), F. R. A. P.

En banc rehearing is suggested in view of Judge Pell's dissent from the majority's opinion, holding all of plaintiff's three patents in suit invalid, and his concurrence with and approval of the lower court's decision upholding validity of all three patents. Four experienced jurists—Judges Swygert, Cummings and Pell of this Court and Judge Morgan* of the District Court—are equally and irreconcilably divided in their respective views as to validity of the patents.

*It is noted that Judge Morgan has sat on this Court in patent cases and has rendered opinions thereon. See *LaSalle St. Press, Inc.* v. *McCormick & Henderson, Inc.*, 445 F. 2d 84 (CA 7, 1971).

Rehearing en banc further is suggested because the majority's opinion states new law on a question of exceptional and broad importance, that is, "Is synergism a necessary requirement for patentability of a combination?"

If synergism is to be required, then it is submitted that the cause should be remanded to the District Court for further findings of fact in accordance with this new test.

It is further submitted that synergism exists in the patented bags in suit. As the majority opinion notes (Slip Op. 1), "All three patents [in suit] claim the invention of specialized bags which prevent leaking and sifting better than previously existing bags." The patented bags are illustrated in the Figs. 1-4 drawings of the opinion (Op. 2 and 4). The bag of Lokey patent 3,650,460 is shown in Figs. 1 and 2 and those of Goodrich Reissues 28,317 and 28,318 in Figs. 3 and 4, respectively. The bag structures are of progressively increasing resistence to sifting and leaking in that order. Thus, the Fig. 4 bag is the most sift and leak resistant and insect-impenetrable paper bag that has been devised in the bag making art (I App. 135-6). By reason of these qualities, the U. S. Government utilizes millions of these bags annually in packaging flour and foodstuffs for overseas shipments in its "Food for Peace" program (I App. 136).

I. Synergism Was Never A Requirement For Patentability: The Court Has Propounded New Law.

The majority opinion of the Court held all three patents in suit invalid as not comprising combinations which are synergistic. The majority held that,

> "Unless the combination is 'synergistic, that is, "result[ing] in an effect greater than the sum of the several effects taken separately,"' it cannot be patented." (Op. 8-9)

The majority cited for this proposition *Sakraida* v. *Ag Pro, Inc.*, 425 U. S. 273, 282 (1976), and *Anderson's-Black Rock* v. *Pavement Co.*, 396 U. S. 57, 61 (1969).

Neither of these cases nor any other recent appellate or Supreme Court decisions stand for this principle. *Sakraida* was decided after the District Court's judgment in this case.

In *Anderson's-Black Rock*, the issue was validity of a patent on a combination apparatus for laying asphalt pavement. In making that determination, the Court admonished the "strict observance" of the established obviousness and non-obviousness test set forth in *Graham* v. *John Deere Co.*, 383 U. S. 1, 17 (1966). 396 U. S. at 62. No synergism requirement was established. Indeed, the only reference to "synergism" appeared in the following context:

> "A combination of elements *may* result in an effect greater than the sum of the several effects taken separately. *No such synergistic result is argued here.*" 396 U. S. at 61. (emphasis ours)

The Supreme Court did not establish any patentability test for combinations other than that of *Graham*.

Sakraida concerned the validity of a patent on a water flush system to remove cow manure from the floor of a dairy barn. Again, the Supreme Court applied the *Graham* test. 425 U. S. at 279. The term "synergism" entered the picture because the Court of Appeals had found that the system " 'does achieve a synergistic result through a novel combination.' " 425 U. S. at 282. Thereupon, the Supreme Court said:

> *"We cannot agree that the combination of these old elements* to produce an abrupt release of water directly on the barn floor from storage tanks or pools *can properly be characterized as synergistic*, that is, 'result[ing] in an effect greater than the sum of the several effects taken separately.' *Anderson's-Black Rock* v. *Pavement Co.*, 396 U. S. 57, 61 (1969). Rather, this patent simply arranges old elements with each performing the same function it had been known to perform, although perhaps producing a more striking result than in previous combinations." 425 U. S. at 282. (emphasis ours)

Nowhere in *Sakraida* did the Supreme Court establish a synergism test of patentability.

Prior to the majority's opinion in this case, and subsequent to *Sakraida*, i.e. after April 20, 1976, the standard applied was the *Graham* definition of obviousness-non-obviousness, not synergism. *Ortho Pharmaceutical Corp.* v. *American Hospital Supply Corp.*, 534 F. 2d 89 (CA 7, April 28, 1976); *Burland* v. *Trippe Mfg. Co.*, 543 F. 2d 588 (CA 7, October 22, 1976).

In *Pederson* v. *Stewart-Warner Corp.*, 536 F. 2d 1179 (CA 7, June 23, 1976), a patent on a snowmobile speedometer was held invalid for obviousness. The Court specifically held that, "The *Sakraida* case reaffirms the holding of *Graham* . . . ." 536 F. 2d at 1180. *Sakraida* was not enlarged into a judicial requirement of synergism.

Other Courts of Appeal have not in their most recent decisions required synergism, although they have cited *Sakraida*.*

Indeed, only in the First Circuit was synergism even mentioned. In *International Tel. & Tel. Corp.* v. *Raychem Corp.*, 538 F. 2d 453 (CA 1, June 25, 1976), *cert. denied*

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*Second: *Maclaren* v. *B-I-W Group, Inc.*, 535 F. 2d 1367, 1375-76 (CA 2, May 20, 1976), *cert. denied* U. S. (Oct. 15, 1976).

Third: *Allegheny Drop Forge Co.* v. *Portec Inc.*, 541 F. 2d 383, 386 (CA 3, Aug. 13, 1976).

Fourth: *Tights, Inc.* v. *Acme-McCrary Corp.*, 541 F. 2d 1047, 1060 (CA 4, July 12, 1976) (patent held valid).

Fifth: *Yoder Bros., Inc.* v. *California-Florida Plant Corp.*, 537 F. 2d 1347, 1378 (CA 5, Sept. 7, 1976) (patents held valid).

Ninth: *Grayson* v. *McGowan*, 543 F. 2d 79, 81 (CA 9, Oct. 12, 1976)

Tenth: *Rutter* v. *Williams*, 541 F. 2d 878, 880-81 (CA 10, Sept. 16, 1976).

D.C.: *Turzillo* v. *P & Z Mergentime*, 532 F. 2d 1393 (CA D. C., April 8, 1976), *on rehearing* 532 F. 2d 1402, 1403 (CA D. C., June 2, 1976), *cert. denied* U. S. (Oct. 18, 1976).

U. S. (Oct. 12, 1976), a holding of validity of a patent on wire insulation was affirmed. The District Court had found that the wire insulation had an unpredictably high temperature rating and was unexpectedly flame resistant: The Court of Appeals considered these findings to establish a synergistic effect. 538 F. 2d at 457. There was no ruling that synergism was essential.

Thus, not one case in the Supreme Court or any Court of Appeals has squarely held that synergism must be shown to sustain the validity of a combination patent. Not one of the recent Court of Appeals decisions has interpreted *Sakraida* as mandating such a test. The test of patentability remains that of *Graham* and *United States* v. *Adams*, 383 U. S. 39 (1966).

II. If Synergism Is A Requirement For Patentability, The Patented Combinations Are Synergistic And Non-Obvious

Plaintiff-appellee submits that the majority in holding the inventions of the patents in suit not to be synergistic has overlooked the important fact that before these inventions, all prior known multiwall bags leaked, sifted and were subject to insect infestation. The patented inventions for the first time eliminated these defects by providing bags "having greatly superior sift-proof properties and moisture and insect penetration resistance," as the District Court found. 403 F. Supp. at 781. Appellee submits that nothing could be more strikingly synergistic than this. Here, the patented combinations result "in an effect greater than the sum of the individual effects taken separately", because the several effects produced only leaky and sifty bags, whereas the patented inventions eliminated these defects and achieved "substantial commercial success." 403 F. Supp. at 783.

With reference to the Lokey patent, the majority's opinion was that,

> ". . . [T]he Lokey bag is *only entitled to a patent if* the fusion of the old elements that comprised the Poppe patent and the old element of multiple layering *created a synergistic combination*. We hold that it did not do so.
>
> * * *
>
> It is difficult to conceive of a more obvious method of strengthening a certain type of bag than putting one bag inside of another." (Op. 9-10) (emphasis ours)

But the multiple walls in the 3-stepped gusset and rear wall construction of the Lokey patent, do more than accomplish the known expedient of strengthening the bag; they provide a sift and leak-proof bag. There is no essential relationship between these two results. The prior art was replete with bags which were multilayered for strength but which were notoriously sifty and leaky, for example, multiwall, sewn end bags which leaked and sifted through the needle holes; multiwall, pasted, square bottom bags which leaked along the bottom fold lines; and multiwall, pasted or sewn end valve bags which leaked through the valve openings. These prior problems were not disputed at the trial of this case. 403 F. Supp. at 783. To combine old elements into a new product—a substantially sift-proof and leak-proof bag —is synergistic under any definition of the word.

Further, it could not have been obvious to a man of ordinary skill in the art, at the time of Lokey's invention in 1961, that by cutting and folding the paper in the particular shape and manner selected by Lokey and then combining the tubes of paper in his specific fashion, the sift and leak-proof properties would be tremendously enhanced over those of then known bags. The history of the art squarely refutes any such inference.

The Poppe patent (Op. 12) was granted in 1940, but there it stood in the public eye for more than twenty years, while suggesting nothing to those not only of ordinary but

of extraordinary skill in the art, until Lokey came along and solved the sifting problem. Certainly, appellant did not adopt the Poppe construction prior to Lokey's invention date. Appellant has been in the paper bag business since prior to 1940, but by admissions of its own technical experts, it was unable to solve the sifting and leaking problem. Its own Schenck patent, which issued in 1952 (III App. 167), was admitted to be of no commercial utilty either as a single ply or multiply bag (I App. 175-6).

The Poppe patent is specific to a method of making a bag (Op. 13), which was conceded to be inoperable to produce a bag structure as *pictorially* but incorrectly depicted in Figs. 2 and 3 of Poppe having steps *vertically cut* along the stepped edges, as claimed by Lokey. Poppe has no disclosure of such vertical or longitudinal cutting, as appellant's technical expert, Becker, admitted at trial:

"Q. I show you a blow-up. I think you will agree this is a copy of Figures 1 to 3 of the Poppe patent you discussed.
A. Yes.
Q. When you make a stepped bag of this general construction, do you have perforators in the vertical direction?
A. Longitudinal.
Q. Longitudinal?
A. Definitely, yes.
Q. And they are missing from this disclosure?
A. I wouldn't know of any way to produce a bag without them.
Q. Doesn't this patent tell you that you could produce them?
A. It does not say so. I don't see where anybody—if you would produce a bag without longitudinal incisions your paper at the snapper would break anyway and *you never would have a good bag.*
Q. *It would tear, would it?*
A. *Yes,* that is correct.

Q. Could you make a multi-wall bag just the way he shows it only with horizontal perforators?
A. I don't know that they are only horizontal perforators.
Q. Do you see any vertical ones? You can examine the patent or read it.
A. They are not indicated, *but you never will be able to . . . make a bag in exactly the fold of the gusset the way it is shown.*
Q. In other words, you couldn't make a bag exactly the way this patent describes it; is that correct?
A. Without a longitudinal incision you could not." (I App. 221)(emphasis ours)

Of course a torn bag is of no practical value, whether single ply or multiply, in the solution of the sifting problem. The "finished product" (Op. 10) of the Poppe patent could not possibly be that shown pictorially in Figs. 2 and 3. Any skilled artisan reading the patent would dismiss it as "inoperative to achieve a sift-proof seal." The District Court found such as fact. 403 F. Supp. at 783. This inoperative structure cannot make the Lokey invention obvious.

As regards the Goodrich reissue patents, the majority opinion holds,

> "The concept of stepping the plies of a multilayered bag is revealed in Windmoller and Holscher French patent 1,227,176.
>
> * * *
>
> Moreover, the transition from the Lokey bag to the reissue bags would not have required great inventive flair to a person skilled in the art. The stepping of all of the plies was the work of a skillful mechanic rather than an inventor, and therefore their incorporation in the reissue bags is not entitled to patent protection under the standard of *Hotchkiss* v. *Greenwood.*"

"Similarly, the use of hot melt adhesive in the reissue bags *did not create a synergistic combination. . . .*" (Op. 10-11) (emphasis ours)

There is absolutely nothing in either Lokey or Windmoller to suggest to one of ordinary skill in the art that the addition of ply stepping to the Lokey construction would impart increased protection against sifting and leaking or that the stepped paper and plastic plies of Windmoller would do so.

Windmoller (Op. 16) provides sift and leak resistance by employing a plastic pouch of polyethylene film, which is heat sealed to closure at the bottom before filling and which is similarly heat sealed to closure at the top after filling. The outer paper plies are stepped at the bag ends for the sole purpose of exposing the opposite ends of the plastic pouch to permit direct heat sealing thereof, as it is difficult to seal plastic by applying heat through the paper plies. The paper plies are not stepped to prevent sifting and leaking and the patent negates any such suggestion by resort to a *heat sealed inner ply* to prevent sifting. (Op. 16-17).

The drawings of Figs. 5 and 6 of the majority opinion (Op. 6-7) compare the sift and leak resistance of a Lokey bag with a '318 reissue bag. The District Court found as fact that the reissue bag structures "do achieve sift, moisture and insect proof qualities which are substantially enhanced over those bags of the Lokey construction." 403 F. Supp. at 781. In Lokey (Fig. 5), some minor sifting and leaking occurs at the flush cut gusset and wall terminations through the small transverse openings, as at A, B and C. Referring to Fig. 6, stepping of the individual plies completely eliminates these openings. The '318 reissue bag (Fig. 6) is the tightest and most sift and leak-proof construction that has ever been produced in a multiwall paper bag (I App. 135-6). And, the hot melt adhesive fills each minute opening to make the bag insect-proof. Appellee sub-

mits that this improvement is neither suggested not taught by either Lokey or Windmoller and was overlooked in the majority's opinion. The combination is synergistic because it provides a new result: a bag more sift-proof, leak-proof and insect-proof than any other. It is submitted that any other conclusion can be derived only by hindsight reconstruction from the prior art in the light of the teachings of the patents in suit.

Conclusion

It is respectfully submitted that the majority opinion should be reconsidered and the decision of the District Court adopted as the opinion of this Court, as recommended in Judge Pell's dissenting opinion. It is further suggested that the Court determine en banc whether synergism is a requirement for patentability of a combination. At the very least, it is submitted that the cause should be remanded to the District Court for further proceedings and findings as to the presence or absence of synergism.

Respectfully submitted,

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United States Court of Appeals

For the Seventh Circuit
Chicago, Illinois 60604

COURT REPORTING DEPT.
U. S. DISTRICT COURT
MAR 23 1977
M. UNGER

March 17, 1977

Before

Hon. LUTHER M. SWYGERT, Circuit Judge

Hon. WALTER J. CUMMINGS, Circuit Judge

Hon. WILBUR F. PELL, JR., Circuit Judge *

ST. REGIS PAPER COMPANY, a New York corporation,
Plaintiff-Appellee,

No. 76-1044 vs.

BEMIS COMPANY, INC., a Missouri corporation,
Defendant-Appellant.

Appeal from the United States District Court for the Southern District of Illinois, Peoria Division.

No. P-Civ.-73-31

On consideration of the petition for rehearing and suggestion for rehearing in banc filed in the above-entitled cause by counsel for the plaintiff-appellee, no judge in active service has requested a vote thereon, no judge in active service has voted to grant the suggestion, and all members of the panel have voted to deny a rehearing. Accordingly,

IT IS ORDERED that the aforesaid petition for rehearing be, and the same is hereby, DENIED.

*Judge Pell voted to grant the petition.

FPI-MI—3-26-76-3M-5311

GEORGE R KOZUCH, C S R. · OFFICIAL COURT REPORTER · U S DISTRICT COURT · PEORIA, ILLINOIS

IN THE DISTRICT CCURT OF THE UNITED STATES
FOR THE SOUTHERN DISTRICT OF ILLINOIS
NORTHERN DIVISION

ST. REGIS PAPER COMPANY, a New York corporation,
Plaintiff,
-vs-
BEMIS COMPANY, INC., a Missouri corporation,
Defendant.

Civil Action
P-Civ. 73-41

B E N C H T R I A L

BEFORE:

HONORABLE ROBERT D. MORGAN,
District Judge.

Peoria, Illinois
Monday, February 11, 1974
Ten O'Clock a.m.

APPEARANCES:

MESSRS. RAYMOND J. McELHANNON
and NORMAN H. ZIVIN
(Cooper, Dunham, Clark, Griffin & Moran)
320 Madison Avenue, New York, New York 10017;
and
MESSR. CLYDE H. HAYNES
150 East 42nd Street
New York, New York 10017;

Testimony Of R. F. Searle

ROBERT FRANK SEARLE,

called as a witness on behalf of the plaintiff, after being first duly sworn, upon his oath, testified as follows, in response to

DIRECT EXAMINATION

BY MR. McELHANNON:

Q Mr. Searle, will you state your full name and home address?

A Robert Frank Searle, 119 West Hills Road, New Canaan, Connecticut.

Q What is your present occupation, Mr. Searle?

A I am a Senior Vice President, St. Regis Paper Company.

Q What are your responsibilities in that position?

A Well, as Senior Vice President I am responsible for the packaging group which is comprised of six division These divisions have fifty-nine plants with accumulated sales of about four hundred fifty million dollars

Q Do your responsibilities include the supervision of plants which manufacture multi-wall bags?

A The bag packaging division is part of the packaging group of which I am responsible.

Q How long have you been with St. Regis?

A Approximately ten and a half years.

GEORGE R KOZUCH, C.S.R. - OFFICIAL COURT REPORTER - U.S. DISTRICT COURT - PEORIA, ILLINOIS

BY MR. McELHANNON:

Q I hand you this bag marked as Plaintiff's Exhibit 53 for identification and ask you to describe what it is.

A This is called a pasted valve bag. It has what we call a tuck-in sleeve and the bad part of this bag is sifting, which occurs around the sleeve.

Q What is it used for principally, what type of materials?

A The bag is used for valve packing of food products, such as flour, for fertilizer, for chemicals, for minerals, for fine pulverized type of products.

Q As I understand it, you say that bag is subject to sifting through the valve opening?

A It could sift, yes, around the valve.

Q I show you Plaintiff's Exhibit 54 for identification and ask you what type of bag that is.

A It is a sewn open-mouth bag.

Q Would you indicate to the Court the sewn closure of the bag?

A The bag is closed by sewing through tape at either end of the bag, obviously causing needle holes to appear in the bag and with extensive use these needle holes do stretch and you do get sifting through the needle holes.

Q Are these bags of the type -- valve bags of the type

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sewn seam bags, the type of 53 and 54, subject to insect penetration?

A They would be, yes.

Q Through these leakage areas?

A Yes, they would.

(WHEREUPON, Documents heretofore marked at pre-trial conference hereinafter referred to as Plaintiff's Exhibit Number 37 for identification.)

MR. McELHANNON:

Q I show you a bag marked Plaintiff's Exhibit Number 37 and ask you what type of bag that is.

A This is called a gusseted type, pinch-bottom style, open-mouth, multi-wall bag. And it is made with the gussets of the bag extended or stepped in beyond the face of the bag and the back of the bag extended beyond the gusset of the bag. All plies have been cut flush.

Q How are the gussets arranged in the open lapped area, the front, the back portion of the gussets?

A The front part of the gusset is stepped beyond the face. The back part of the gusset is stepped beyond the front part of the gusset and the back of the bag is stepped beyond the gusset, but these are flush cut.

Q Can you characterize the properties of that type of

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bag as regards strength, leakage, things of that nature?

A Pinch-bottom bags have superior end strength to them, because there is no perforations. They are very tightly sealed.

Q Are they insect-repellent and leak-proof, that particular type of bag?

A That bag would be superior as far as leak-proofness is concerned, compared to a sewn bag or a standard pasted bag.

Q How about the strength of the bag at the end closure?

A The bag has a definite superior end strength compared to a conventional bag.

Q Why is that, Mr. Searle?

A Well, it is basically because in a sewn bag, where you perforate with needle holes, you have a weakness there and the bag can tear or leak there.

On a pasted bag you do have an area where you can get escape or sift. In a bag of this sort, because of the nature of the construction and the sealing of the plies, you do get a superior end performance to the bag. This can be proven out by physical tests which normally are --

Q When you close that type of bag, how do you close it to get adherence, so to speak, of the end of the bag

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with the opposite wall of the bag?

A Normally speaking when these bags are made now, you pre-apply an adhesive to the end of this bag. It is a thermoplastic type of adhesive. And then when the bag is filled, you fold the end down and you re-heat this adhesive and apply pressure to the end of the bag, and that seals by the thermoplastic all the plies together with the rest of the bag.

Q Is that adhesive applied to the exposed back wall portion of the bag and to the exposed gusset portions at the end of the bag?

A Normally it is applied across all of these open flaps at the top and at the bottom of the bag.

Q Including the gusset portions?

A Yes, sir.

(WHEREUPON, Document heretofore marked at pre-trial conference hereinafter referred to as Plaintiff's Exhibit Number 25 for identification.)

BY MR. McELHANNON:

Q I show you a bag marked Plaintiff's Exhibit Number 25 and ask you if you can describe the end construction o that bag.

A This is a gusseted type, open-mouth, pinch-bottom style multi-walled bag, where the gussets are stepped beyond

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the face of the bag and the back are stepped beyond the gusset of the bag. Between this bag and the other bag is the fact that the various plies and the face and the gusset and the back of the bag are all stepped with reference to each other.

Q Are the plies stepped in the gussets -- front, back and front gusset portion?

A They are stepped in the front and back portion of the gusset, yes.

Q Are they also stepped in the front and back portions of the bag?

A They are stepped in the front and back portions of the bag.

Q "Walls," I guess I should say.

A That is true.

Q Will you state the advantages, if any, of this Exhibit 25 type of bag versus that of Exhibit 37?

A Well, this bag would have superior end strength such as that bag, because pinch-bottom bags do have superior end strength. This bag, in addition, would have superior sift-proofness because in stepping the various plies of the bag when you seal the two ends of the bag, you will seal off any possible places where you might obtain sifting by stepping of the various plies.

In this case you get each single ply adhered to

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every other single ply.

Q How about insect repellence of it, repellence against insect infestation into the bag?

A This bag is the tightest type of closure that you can conceive and will prevent beyond any other type of bag insect infestation because of the tightness of the closure.

Q And that is due to the stepping of the gussets as well as the stepping of the plies?

A Stepping of the gussets and plies. And the fact that the bags are normally handled thereafter and are stored or re-handled, in many cases the end closures will open up.

On a bag of this sort you get very little of this opening up of these closures and it stays very, very substantially closed.

Q Suppose you had a bag that has the stepping of the plies in the front and back walls and the gussets arranged with Exhibit 37, which the gussets are flush cut, would you characterize that type of bag as between the construction of 37 and the construction of Exhibit 25?

A Well, in stepping the plies and the gussets you obtain a greater sift-proofness than you would on a bag without the stepping of the plies and the gussets.

The bag would have both superior end closures. This would be the most sift-proof construction of the two (indicating).

Q How about the hypothetical one I just described as compared to Exhibit 37, where the gussets are flush cut but plies are stepped in the front and back walls?

A Well, you'd get a degree of sift-proofness but you would still have a possibility of sifting in the gusset area if you didn't step the various plies in the gusset.

Q In other words, as I understand you, this Plaintiff's Exhibit 25 is the best bag of this pinch-bottom type you could make?

A Most superior.

Q And this would be a sort of a starting point?

A That is true. That was the initial attempt to obtain a sift-proofness.

Q And the second one would be intermediate to those two properties?

A That would be true. This is the ultimate.

Q Incidentally, who is this bag made ultimately for? What is it to be ultimately used for?

A This bag is used by the Department of Agriculture for shipments of various food products overseas. Overseas shipments always were -- normally were handled in

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textile type of bags and they devised this construction of a bag to prevent damage, to prevent infestation and to deliver the product overseas in better condition.

Products going overseas get re-handled as much as thirty times. And upon occasion they have as much as fifty per cent damage at the ultimate destination, plus tremendous infestation. And there has been a tremendous program on, of course, to reduce this damage and to deliver this product overseas in the very best possible shape.

Q That has been a problem over the years with earlier types of bags?

A Continuous problem, a very bad problem.

Q Has it been effectively solved in your opinion by this latest type of bag, Exhibit 25?

A It has been quite effectively solved, yes.

Q What would be your experience or opinion as to it as regards to a multi-wall bag of the type shown in Plaintiff's Exhibit 37 versus a single-ply bag of the same general end construction?

A Well, multi-wall bag of the same weight, as compared to a single-ply bag of that weight is a superior type of bag.

A multi-wall bag has what they call a multi-wall

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effect, and you gain strength in a multi-wall bag over a single-ply bag from the so-called multi-wall effect.

A single-ply bag cannot be made to have the various stagger constructions that you can get in a multi-wall bag and, therefore, will have greater tendency to sift and certainly will have a greater tendency to tear or to pull away.

Q When you speak of the "Multi-wall effect," could you describe that a little more specifically as to what that effect is and how it is obtained in a multi-wall bag? I assume you don't get it in a single-wall bag.

A Well, a multi-wall effect is sort of a mysterious effect, except all paper has a tendency to stretch a little. And if you have several plies of paper, they seem to conform with each other and give a total strength that is greater than a single ply of paper will afford.

Also, if you have a single-ply, sometimes you get a delamination of that single ply and the bag is gone. With a multi-wall, you can have a delamination of one of the plies but you still have other plies to hold the bag.

Q That multi-wall bag, Exhibit 37, I think it is -- are the various paper plies bonded together throughout the

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bag from top to bottom?

A They are only bonded together at the end of the bag and that is to give you added strength so that when you seal the ends you are in effect pasting all the plies together and your bag isn't merely held with one ply.

Q Otherwise when they are not bonded together you would have what you call a single-ply effect; is that right?

A Very much so.

Q Now, I notice this bag appears to have a seam down it. Are these various plies bonded together at that seam? Will you explain that?

A No, in a multi-wall bag you bond the various plies together, but you don't bond the plies together with each other. You don't do that to give the various plies room to move. If you bonded them all together you would lose a lot of this so-called ability of the bag to conform or stretch and you'd lose some of the strength characteristics.

Q That's the multi-wall effect that you were talk[illegible] about?

A That's it, yes.

Q Now, in this bag of Exhibit 15, where you stepped the plies in the gussets and in the ends of the bag, I take it you get the effect of multi-wall which you have just discussed with respect to Exhibit 7, plus

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additional multi-wall effects; is that true?

A You wouldn't get additional multi-wall effects on the bag of this over that (indicating). You'd merely get additional strength through the closure and you'd get additional sift-proofness.

MR. POWERS: Pardon me, Mr. McElhannon. Which bag is that you handed the witness?

MR. McELHANNON: That is Plaintiff's Exhibit 25.

MR. POWERS: You said "15".

MR. McELHANNON: I beg your pardon. 25. Thank you, Mr. Powers.

THE COURT: Let me ask this, gentlemen: Has this witness testified to anything yet that the other side wouldn't stipulate to pretty clearly?

MR. McELHANNON: I think he has, Your Honor. Is that true Mr. --

THE COURT: Certainly I don't see any controversy about the multi-wall effect or --

MR. POWERS: I'd certainly stipulate to that, Your Honor. No problem about that as far as I am concerned.

THE COURT: Are the advantages of the stepping of plies -- is there any argument about that? Let's don't take a lot of time if there isn't. Let's not take a lot of time finding out.

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(WHEREUPON, Documents heretofore marked at pre-trial conference hereinafter referred to as Plaintiff's Group Exhibit Number 35 for identification.)

BY MR. McELHANNON:

Q I show you a Group of documents marked Plaintiff's Exhibit 35 and ask you if you can identify that.

A Well, these are a series of promotional letters and advertisements circulated by our bag packaging division, all relating to the pinch-bottom style of bag.

Q What do they describe? The properties of the bag in various respects?

A That's true, they show the various advantages of this bag over other types of bags and the various usages of the bag where they have solved various problems.

Q Compared to the valve bag and the sewn bag?

A That is true.

Q This pinch-bottom type of bag we have been discussing this morning proved commercially successful?

MR. POWERS: Objection, Your Honor. That would call for a conclusion and opinion, and there hasn't been any foundation laid for that.

THE COURT: Well, I will permit him to answer. He has been selling them quite a while.

A I would say it's been a very definite commercial

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success.

BY MR. McELHANNON:

Q About how long has this type of bag been in industry?

A We produced our first bags commercially in 1962 and they have been used commercially since then.

Q Have they been sold in increasing or decreasing quantities since then?

A Yes, the statistics show today that approximately one hundred ten million of these bags were sold in 1972 by the entire industry, and compared to 1966 there were approximately ten million bags sold in the industry.

Q I suppose prior to that date even smaller quantities, is that right?

A Well, that's true, of course.

Q Did St. Regis pioneer this type of bag?

A To my knowledge we were the first to manufacture this bag, the first to use it commercially.

Q I show you some statistics that were given, I believe, by you in answer to Defendant's Third Interrogatory -- I think it was the Third -- Second Interrogatories, Answers to Interrogatories 95 and 96, and ask you to verify the correctness of the same.

A This shows that we have admitted to have made eight hundred fifty -- or eight million five hundred

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thousand bags in 1966, up through 1972, when we supposedly made fifty-three million two hundred thousand pinch-bottom bags and to my knowledge that is approximately true.

Q What is the other data recorded there?

A This shows that in our opinion the industry produced approximately ten million of these bags in 1966, and by 1972 had sold approximately one hundred eleven million and to the best of my knowledge is true.

THE COURT: When you are referring to "these bags," you are referring to the type as Plaintiff's Exhibit Number 25; is that right?

THE WITNESS: That's right, pinch-bottom style bags.

THE COURT: All pinch-bottom bag styles?

THE WITNESS: All of these bags were pinch-bottom style yes.

BY MR. McELHANNON:

Q Well, some were like Exhibit 37, I take it?

A They were all pinch-bottom stype bags.

Q Has there been over the years a need for a type of bag we have been discussing as shown in Exhibits 37 and 25?

A There most certainly has. Over the period of years there has been a need to develop bags that would contain odors, that would prevent sifting, that would

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be superior strength, that would be more moisture proof and these are all characteristics of the multi-wall pinch-bottom bag.

Q How long would you say that need has extended back in your experience?

A Since the first bags were made back in the middle -- around 1850.

Q I mean your experience.

A My experience? Certainly since the time I have been in the industry in 1948.

Q Are you familiar in a general way with the patents involved in this litigation owned by St. Regis?

A Yes, sir, I am.

Q Do you know whether or not any licenses have been granted under those patents to anyone in industry?

A There have been three licenses granted to my knowledge.

Q Do you remember what companies had the license?

A Westvaco.

Q It means West Virginia Company.

A W-e-s-t-v-a-c-o. Union Camp Corporation and Bancroft Company.

(WHEREUPON, Documents heretofore marked at pre-trial conference hereinafter referred to as Plaintiff's Exhibits 24, 49 and 50 for identification.)

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BY MR. McELHANNON:

Q I show you Plaintiff's Exhibits 24, 49 and 50 and ask you if those are the licenses you had in mind?

A 24 is an agreement between St. Regis and Westvaco Pulp and Paper, licensing them to make bags under the Goodrich patent.

50 is an agreement with Bancroft Bag Company, Inc., licensing them to make bags under the Lokey and Goodrich patents.

And Exhibit 49 is an agreement with Union Camp Corporation licensing them to make pinch-bottom bags under the Lokey and Goodrich patents.

Q I think you missed Lokey in connection with the Westvac agreement, but they are also licensed under that patent as well, are they not?

A That's right, Lokey as well as the Goodrich patent.

Q Have licenses similar to those that you have been discussing been offered to other companies to your knowledge?

A Yes, they have. We offered a similar license to Chase Bag Company in 1972.

Q How about Bemis, has one ever been offered to them?

A A similar license was offered to Bemis in 1972.

(WHEREUPON, Documents heretofore marked at pre-trial conference hereinafter

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referred to as Plaintiff's Exhibits Numbers 44 and 51 for identification.)

BY MR. McELHANNON:

Q I show you Plaintiff's Exhibit 44 and 51 and ask you if those are the agreements so offered?

A Yes, 44 is an offer to a license agreement to Bemis Company and 51 is an offer to a license to Chase Bag Company.

Q Are either of those agreements accepted today?

A Neither one has been accepted.

Q Have similar licenses been offered to other bag companies, do you recall? If so, can you recall which?

A Yes, we have offered licenses to International Paper Company, Gilman, to Horner Waldorf Paper Company, Great Plains Paper Company, Olin Kraft.

Q Olin Graf, did you say?

A Olin Kraft.

Q Olin Kraft?

A Right, O-l-i-n, K-r-a-f-t.

Q Have any of those licenses been accepted to date?

A No, these are still under negotiation.

Q Now, will you take a look at these license agreements, Plaintiff's Exhibits 44, 49, 50 and 51, and tell me whether or not they are identical or whether they are different in any respect?

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A They all appear to be identical agreements.

Q Now, with regard to this Bancroft agreement, will you read into the record paragraph 4 on page 2?

A Paragraph 4: "This writing supersedes any prior agreements and constitutes the entire agreement between the parties hereto relating to the subject matter hereof."

Q And that paragraph, I take it, is contained in each of these other agreements?

A Yes, it is.

Q Is it the policy of St. Regis Paper Company to grant licenses such as those you have referred to to anyone in industry who wants one?

A Yes, it is.

Q Referring to this Bancroft license agreement, Plaintiff Exhibit 50, what is the royalty rate specified in that agreement?

A Royalty rate of 1.2% of the total net sales of all bags which are made or sold or otherwise disposed by the license during preceding calendar half-year in which or at the time the bags are made covered by any of the patents.

Q And that same royalty rate is specified in all other agreements?

A Yes, it is.

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Q In other words it is a uniform royalty rate offered to all?

A Yes, it is.

Q Do you know whether or not this pinch-bottom type of bag that we have been discussing has created any new markets in industry?

A It has created new markets for the multi-wall industry, yes. The Department of Agriculture in moving commodities overseas previously used other than paper bags, mostly textile bags. The pinch-bottom, multi-wall bag has now been used almost exclusively for products that they have approved.

The pinch-bottom multi-wall bag has allowed the industry to package certain types of chemicals that require superior type of protection. These chemicals had previously been chipped in barrels or in boxes. The multi-wall pinch-bottom bag can be constructed with moisture-proof barriers and this has allowed these products to be packaged and shipped in multi-wall bags.

There are certain products that exude certain odors that previously couldn't be shipped in multi-wall bags and because of the tightness and imperviousness of the pinch-bottom multi-wall bag, these products can now be packed in multi-wall bags. These are all

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three markets are fairly new.

Q What they might have been packed in the past, previously in cans or things of that sort?

A Cans or drums, or lined boxes or things of that sort.

MR. McELHANNON: I would like to introduce into evidence the exhibits we have discussed this morning.

Have you any objection, Mr. Powers?

MR. POWERS: No objection.

THE COURT: All right, they may be admitted.

(WHEREUPON, Plaintiff's Exhibits Numbers 53, 54, 37, 25, Group Exhibit 35, Numbers 44, 49, 50, and 51, were admitted into evidence.)

MR. McELHANNON: I have no further questions on direct examination.

THE COURT: You may cross examine.

MR. POWERS: Mr. Roedell will cross examine.

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July 30, 1940. G. W. POPPE 2,209,901

METHOD OF MAKING SIFTPROOF BAGS

Original Filed Sept. 15, 1937 2 Sheets-Sheet 1

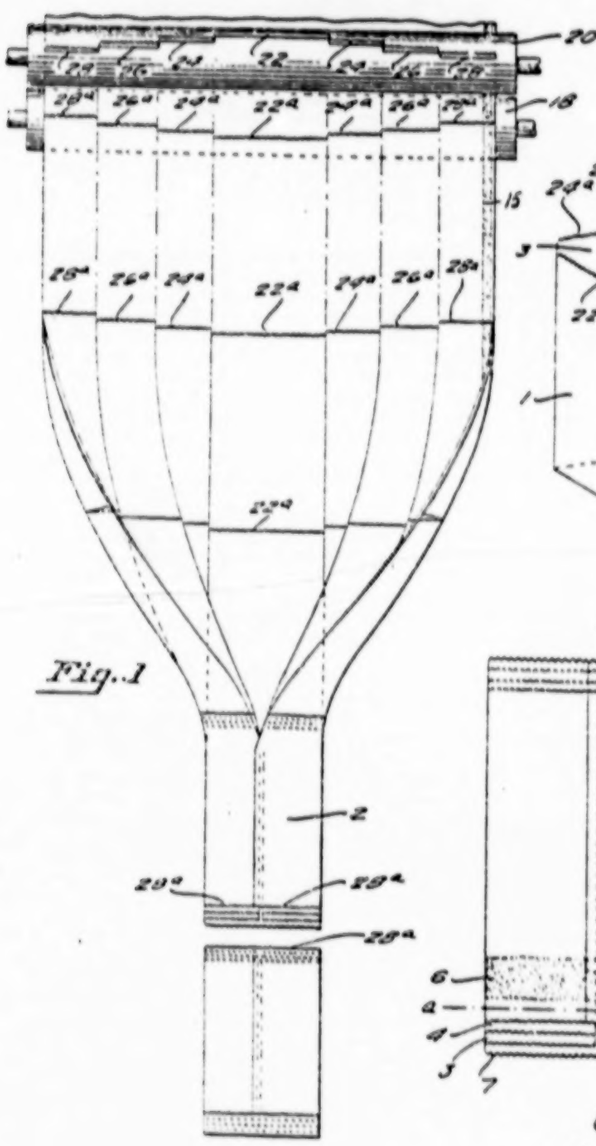

Fig. 1

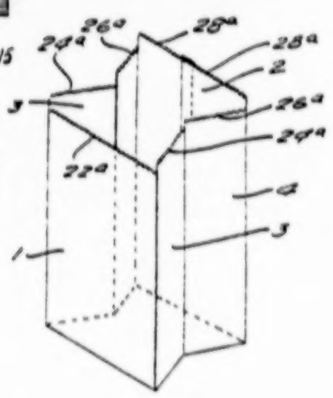

Fig. 3.

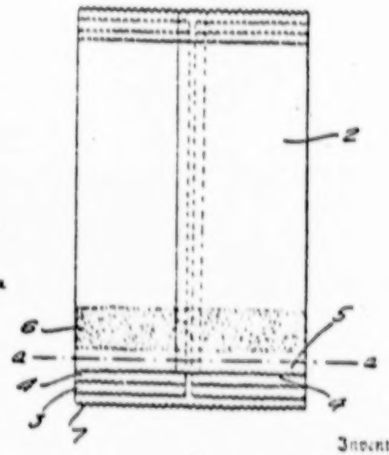

Fig. 2.

Inventor
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July 30, 1940. G. W. POPPE 2,209,901

705

METHOD OF MAKING SIFTPROOF BAGS

Original Filed Sept. 15, 1937 2 Sheets-Sheet 2

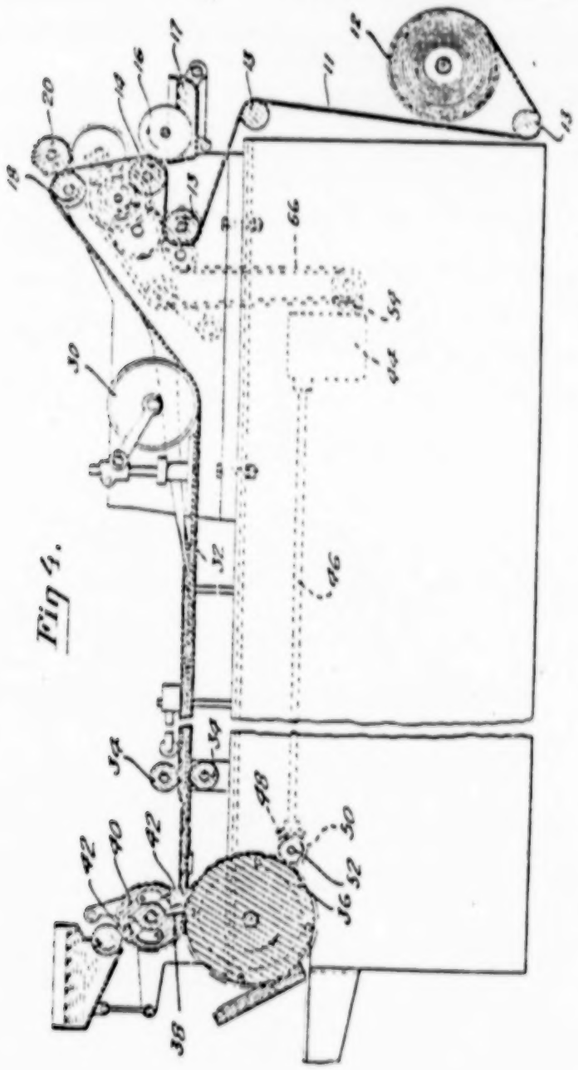

Fig 4.

Inventor

George W. Poppe

by Geo. M. Dowe

Attorney

Patented July 30, 1940 2,209,901

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UNITED STATES PATENT OFFICE

2,209,901

METHOD OF MAKING SIFTPROOF BAGS

George W. Poppe, Brooklyn, N. Y.

Original application September 15, 1937, Serial No. 163,693. Divided and this application April 7, 1939, Serial No. 266,478

3 Claims. (Cl. 93—35)

This invention relates to a method of producing a siftproof bag of the character known in the art as a gusset, bellows fold, or square bottom bag and is a division of my application, Serial Number 165,693, filed September 15, 1937.

A primary object of the invention is the production of a siftproof bag of the character above set forth by a method which enables it to be made at a high rate of speed by known bag machinery.

Since the method in commercial production is practiced on a bag machine, it will best be understood when described in connection with such machine.

In the accompanying drawings,

Figure 1 is a top plan view of portions of a bag machine of known construction, and showing how a web of paper is cut and folded into a tube, from which bag sections are successively formed;

Figure 2 is a bag section, after severance from the tube, but prior to folding over of the bag bottom;

Figure 3 is a perspective view showing the bag in partly opened condition to more clearly indicate its general construction; and

Figure 4 is a side elevation, partly broken away, of so much of a machine of known construction as will sufficiently illustrate how my method is practiced and the bag produced at the high speed necessitated by commercial requirements.

In order that the description may accord with that of the parent case, I have used the same reference characters to designate the same parts in the present divisional application as in the parent case.

Referring to Figures 1 and 4, a web of paper 11 carried by a roll 12 passes from said roll over suitable guiding rollers 13, and about a roller 14 where the edge of the web receives a line of paste indicated at 15, Figure 1 and supplied by a disc 16, Figure 4 which dips into a paste pot 17. From the roller 14 the web passes over another roller 18 made of rubber or similar material and as it passes over said roller the web is perforated by a serrated edge knife carried by a cylinder 20. For convenience, in manufacture and assembly, the knife is preferably made in sections and each section may be independently adjustable in the cylinder 20, although, of course, a knife might be constructed in one piece and shaped as shown.

Assuming a sectional construction, the center section 22, Figure 1 makes a series of perforations in the web which determine the top and bottom edges of the plain wall of a bag portion prior to folding the bottom. Sections 24, adjacent the section 22 form the top and bottom edges of one ply of the bellows fold. The sections 24 are in alignment with each other but are stepped from the section 22. The sections 26 are likewise in alignment with each other but are stepped from the sections 24, these sections 26 forming the top and bottom edges of the other ply of the bellows fold. Sections 28 are in alignment with each other but each stepped from the adjacent section 26 and form the bottom and top edges of the seam wall of the bag when the web is folded into a tube. The lines of perforations 22a, 24a, 26a and 28a, Figure 1 show the condition of the web after the knife sections correspondingly numbered, have acted upon it as the web passes over the roller 18.

After the web is perforated as above described, it passes under a roller 30, Figure 4 and under a former 32 about which it is folded by the usual mechanism to produce bellows folds between the bottom plain wall 1, Figure 3, and the upper seam wall 2. The seam wall is produced by folding the pasted portion 15 over onto the opposite longitudinal edge of the web as indicated in the lower portion of Figure 1.

The folded tube and web are fed through the machine by means of the usual feed rollers 34, Figure 4, from which rollers the tube passes over the clamp cylinder 36 having the usual clamps for receiving the bottom folded portion of the tube, such fold being produced by the usual tucker blade 38 carried by a roller 40. This roller also carries one or more paste bars 42 which supply the paste to the seam wall of the bag just after the action of the tucker blade to tuck the end of the tube into the clamp. The cylinder 36 is rotated in such a manner that the peripheral speed is greater than the peripheral speed of the feed rollers 34 and therefore when the tucker blade tucks the end of the bag tube into the clamp a bag tube section is severed from the main tube. A severed section is indicated at the lower portion of Figure 1 which also shows the bottom of the section folded over and pasted, thereby forming the completed article. Figure 2 shows a section somewhat enlarged from that shown in Figure 1 and prior to the pasting of the bottom. The line of fold, however, is shown along the line c—c and the paste area is indicated by the reference character 6.

In the completed bag therefore the lower edge of each ply of the bellows fold indicated at 4, Figures 2 and 3 is off-set from the lower edge of each ply of the fold 3 and may therefore be pasted down onto the seam wall 2 of the bag. The end of the plain bag wall indicated at 7 is

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likewise offset from the edges of the bellows fold 3 and is pasted down on the seam wall. The lower edge of the seam wall is folded over on itself and this edge is offset from the edges 4.

It will be noted that the paste area 6, extends from a position below the edge of the turned-over portion 5 and almost to the end of the turned-over portion 7, and that the ends of both bellows folds as well as the fold 5 are pasted onto the seam wall. With this construction a thoroughly siftproof bag of the bellows type is produced.

The machine may be driven by a motor indicated diagrammatically at 44 having a transmitting shaft 46 on the end of which is a bevel gear 48 meshing with a smaller bevel gear 50 on a shaft 52 which carries suitable gears for driving the clamp cylinder 36 at the proper speed.

A stub shaft 54 also projects from the motor casing and through suitable gears drives a chain 56 whereby the cylinder 20 carrying the knives is driven once for each bag to be produced.

The machine being well known has not been described in detail but its general operation only is set forth in order that a practical manner of practicing my method may be sufficiently disclosed.

It is to be understood, however, that variations may be resorted to in the method and machinery used provided such variations are within the scope of the invention and without departing from the spirit thereof.

What I claim is:

1. The method of making a bellows fold siftproof bag which consists in perforating a continuously advancing web of paper, along transverse lines, said lines defining the ends of a section that is to constitute a bag, the transverse perforations defining the ends of each adjacent plies of bellows fold being off-set from each other and also off-set from the perforations defining the walls of a bag section to which each is adjacent, folding the web into a bellows tube, severing a section from the tube along said perforated lines, and closing the bottom of the section to complete the bag.

2. That step in the process of forming a bellows fold siftproof bag which consists in making perforations in a continuously advancing web of paper, along transverse lines which lines define one end of the plies of the bellows fold, the lines defining the end of one ply of each fold being off-set from the end of the other ply of the fold.

3. Those steps in the process of making a bellows fold siftproof bag which consists in making perforations in a web of paper along transverse lines which lines define one end of a bag wall and one end of the plies of the bellows fold, the lines defining the end of one ply of the bellows fold being offset from the other ply of the fold, the ends of both plies being off-set from said line defining the end of the bag wall.

GEORGE W. POPPE.

CERTIFICATE OF CORRECTION.

Patent No. 2,209,901. July 30, 1940.

GEORGE W. POPPE.

It is hereby certified that the above numbered patent was erroneously issued to the inventor, said "POPPE" whereas said patent should have been issued to --Equitable Paper Bag Co. Inc., of Brooklyn, New York, a corporation of New York--, as assignee of the entire interest therein, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of October, A. D. 1940.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

GEORGE R. KOZUCH, C.S.R. - OFFICIAL COURT REPORTER - U.S. DISTRICT COURT - PEORIA, ILLINOIS

IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE SOUTHERN DISTRICT OF ILLINOIS
NORTHERN DIVISION

ST. REGIS PAPER COMPANY, a New York corporation, Plaintiff,	)	Civil Action
-vs-	)	P-Civ. 73-41
BEMIS COMPANY, INC., a Missouri corporation, Defendant.	)	

BENCH TRIAL

BEFORE:

HONORABLE ROBERT D. MORGAN,
District Judge.

Peoria, Illinois
Monday, February 11, 1974
Ten O'Clock a.m.

APPEARANCES:

MESSRS. RAYMOND J. McELHANNON
and NORMAN H. ZIVIN
(Cooper, Dunham, Clark, Griffin & Moran)
320 Madison Avenue, New York, New York 10017;
and
MESSR. CLYDE H. HAYNES
150 East 42nd Street
New York, New York 10017;

Testimony of Arnold F. Becker

(WITNESS EXCUSED.)

THE COURT: Do you have another witness?

MR. POWERS: Yes, Your Honor. I call Arnold Becker.

ARNOLD F. BECKER,

called as a witness on behalf of the defendant, after being first duly sworn, upon his oath, testified as follows, in response to

DIRECT EXAMINATION

BY MR. POWERS:

Q Will you please state your name, your age and your address?

A Arnold F. Becker, 49 years of age, 1049 Bloomwood Road, San Pedro, California.

Q What is your occupation, Mr. Becker?

A I'm a production manager with the Bemis Company, Inc., in Wilmington, California.

Q How long have you been with the Bemis Company?

A Fifteen and one-half years.

Q How long have you been production manager of the Wilmington plant?

GEORGE R KOZUCH, C S R. - OFFICIAL COURT REPORTER - U S DISTRICT COURT - PEORIA, ILLINOIS

A For about five years.

Q What are your duties as production manager?

A I'm in charge of production planning, scheduling, improvement of machinery and also long-range planning.

Q What positions did you hold with Bemis before you became production manager?

A Auto mechanical engineer, plant engineer, superintendent and then production manager.

Q What experience did you have in the bag industry before you went to work for Bemis?

A I worked since 1949 with a German paper converting machinery company and as such I traveled for about ten years all over the world.

Q What kind of machinery were you concerned with?

A Step end machinery.

Q That's for making bags with stepped end constructions?

A That's correct.

Q Do you produce pinch-bottom, open-mouth bags at the Bemis plant in Wilmington?

A Yes, we do.

Q I hand you a bag which has been marked as Plaintiff's Exhibit 22 and ask you if that is a bag made at your plant?

A Yes, it is.

Q How can you tell that?

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CROSS EXAMINATION

BY MR. McELHANNON:

Q Mr. Becker, was it?

A That is correct.

Q I show you a blow-up. I think you will agree this is a copy of Figures 1 to 3 of the Poppe patent you discussed.

A Yes.

Q When you make a step bag of this general construction, do you have perforators in the vertical direction?

A Longitudinal.

Q Longitudinal?

A Definitely, yes.

Q And they are missing from this disclosure?

A I wouldn't know of any way to produce a bag without them.

Q Doesn't this patent tell you that you could produce them?

A It does not say so. I don't see where anybody -- if you would produce a bag without longitudinal incisions your paper at the snapper would break anyway and you never would have a good bag.

Q It would tear, would it?

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A Yes, that is correct.

Q Could you make a multi-wall bag just the way he shows it only with horizontal perforators?

A I don't know that they are only horizontal perforators.

Q Do you see any vertical ones? You can examine the patent or read it.

A They are not indicated, but you never will be able to show a bag with your-- will make a bag in exactly the fold of the gusset the way it is shown.

Q In other words, you couldn't make a bag exactly the way this patent describes it; is that correct?

A Without a longitudinal incision you could not.

Q You could not, thank you. In referring to this bag which has been marked Plaintiff's Exhibit 22 and you were looking at a while ago, do you remember that?

A Yes.

Q I think you said that you couldn't have any adhesive on the front wall of the bag.

A I'd like to correct you. I did not say we could not have any. We try not to have any.

Q You try not to have any?

A That's correct.

Q I take it you make plenty of bags but you do have it, is that correct?

A No, we do not, sir.

GEORGE R KOZUCH, C.S.R. - OFFICIAL COURT REPORTER - U.S. DISTRICT COURT - PEORIA, ILLINOIS

Jan. 15, 1952 A. E. SCHENCK 2,582,286

BAG CLOSURE

Filed June 16, 1947 3 Sheets-Sheet 1

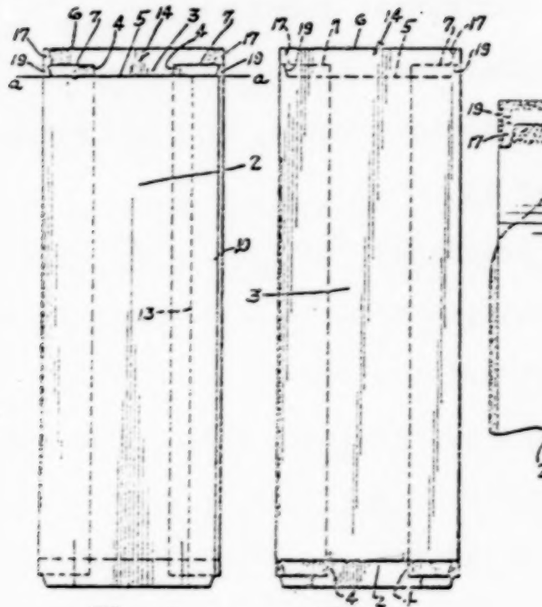

FIG. 1

FIG. 2

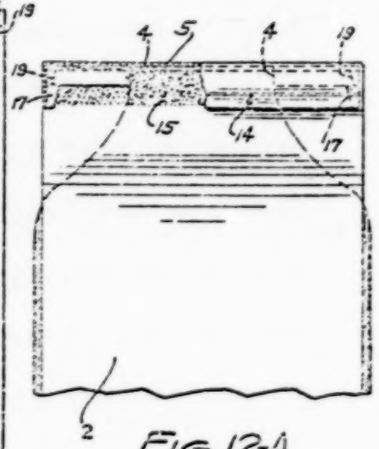

FIG. 12-A

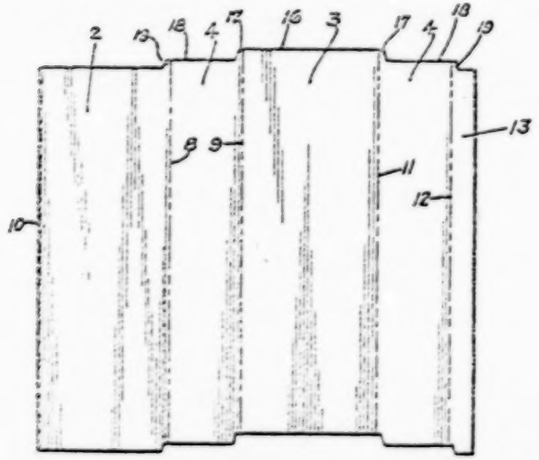

FIG. 3

INVENTOR.
ARTHUR E. SCHENCK
BY Paul, Paul & Moore
ATTORNEYS

Jan. 15, 1952 A. E. SCHENCK 2,582,286

BAG CLOSURE

Filed June 16, 1947 3 Sheets-Sheet 2

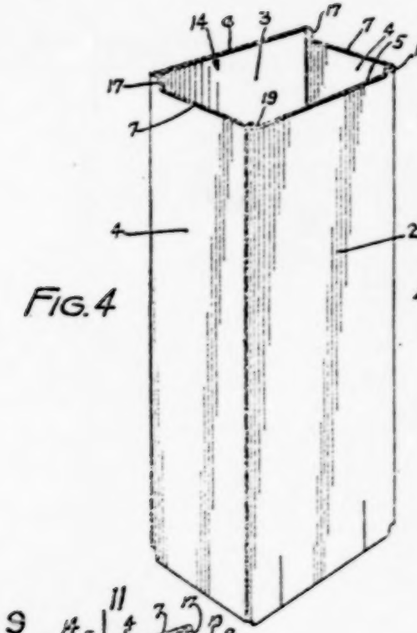

FIG. 4

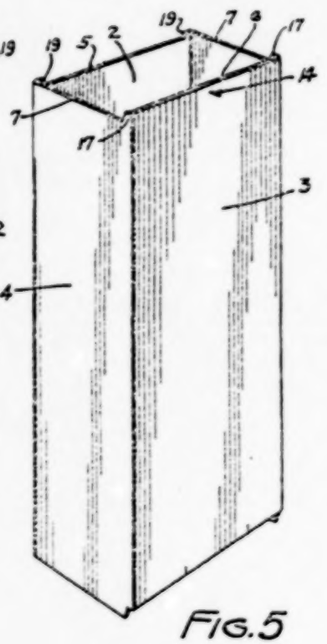

FIG. 5

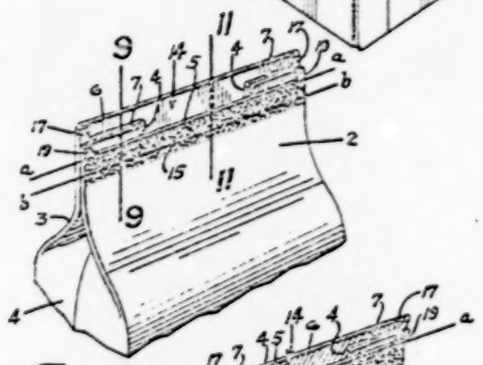

FIG. 6

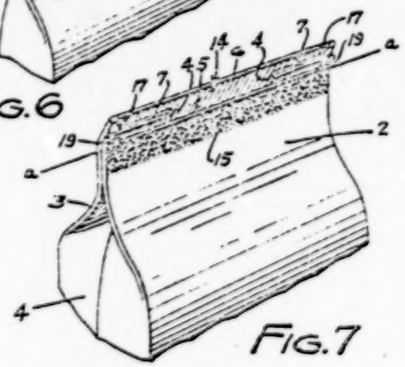

FIG. 7

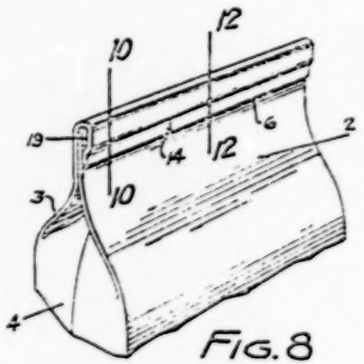

FIG. 8

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Jan. 15, 1952 A. E. SCHENCK 2,582,286

BAG CLOSURE

Filed June 16, 1947 3 Sheets-Sheet 3

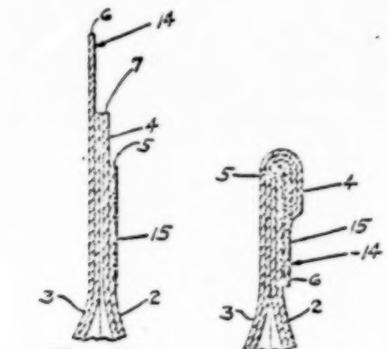

FIG. 9

FIG. 10

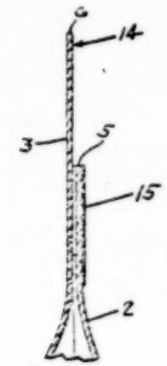

FIG. 11

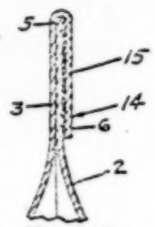

FIG. 12

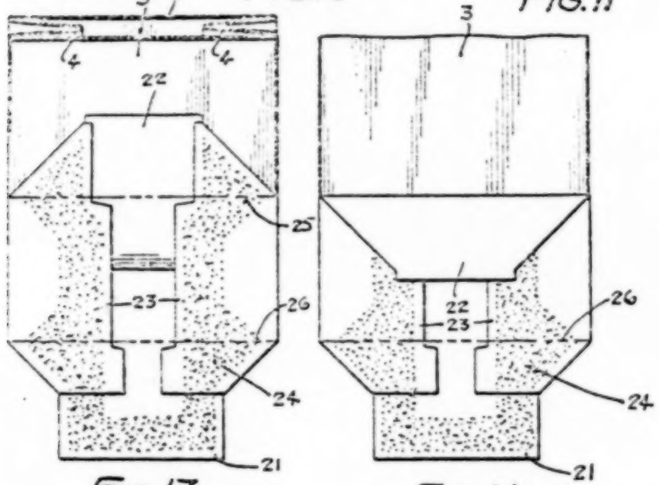

FIG. 13

FIG. 14

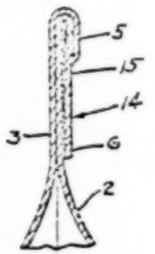

FIG. 12-B

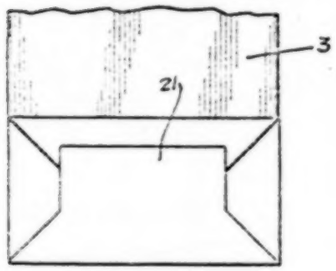

FIG. 15

INVENTOR.
ARTHUR E. SCHENCK
BY Paul, Paul & Moore
ATTORNAYS

UNITED STATES PATENT OFFICE

2,582,286

BAG CLOSURE

Arthur E. Schenck, Woodhaven, N. Y., assignor to Bemis Bro. Bag Company, Minneapolis, Minn., a corporation of Missouri

Application June 16, 1947, Serial No. 754,987

1 Claim. (Cl. 229—62)

1

This invention relates to new and useful improvements in bag closures and more particularly to closures for sealing the open tops of flexible walled bags of the intucked type, and wherein the bag top walls are pressed into flatwise relation before sealing the bag mouth.

Numerous attempts have heretofore been made to develop a bag closure which would be simple and inexpensive in construction, and which when completed would positively seal the bag mouth against leakage and sifting. Bags have heretofore been made wherein one of the bag top walls was projected above the remaining bag top walls to provide an integral flap extending the width of the bag mouth, whereby when the bag top walls were pressed into flatwise relation, said flap could be folded over the flattened bag top walls and secured to the face of the opposite wall, thereby to seal the bag mouth. In such closures it has been extremely difficult to render the corners of the sealed bag top siftproof, because portions of the contents of the bag, particularly if finely pulverized, would find its way between the plies of the flattened bag top walls to the extreme corners of the bag top at each end thereof where it might sift through because of the inability to tightly seal such corners by folding the extended flap into sealing engagement with the opposite wall, as above described.

To overcome the difficulty now commonly experienced with such bag closures, and particularly with bags of the intucked type, I have found that by providing what may be termed the back wall of the bag top with an upwardly projecting flap, and then forming the top of the bag walls in such a manner that the top edges of the intucked edge walls are disposed at an elevation above the edge of the front wall of the bag top, that a leak- and sift-proof closure may readily be obtained by folding the extending flap of the rear wall and the projecting ends of the intucked walls over into flatwise relation with the upper portion of the front wall, and then adhering the flap and portions of the edge walls to the front wall by a suitable adhesive, that the danger of leakage or sifting of the contents of the bag therefrom at the corners of the bag closures may be completely eliminated.

It is therefore an object of the present invention to provide a closure for bag bodies of the intucked type, whereby the mouths of such bags may be closed and sealed in a manner to positively prevent leakage or sifting of the contents from the bags through the closed tops thereof, even though the bags are roughly handled in transit.

2

A further object is to provide a tubular bag body blank of the intucked type having one of relatively wider walls projected upwardly above the top edges of the remaining bag top walls to provide an integral closure flap, and wherein the upper marginal edge portions of the intucked walls are disposed at an elevation between the upper and lower edges of the relatively wider walls of the bag body, whereby when the upwardly projecting closure flap is subsequently folded over into flatwise engagement with the opposed or front wall on a line coincident with the top edge of said opposed wall, or along a fold line spaced downwardly from the upper edge of the opposed wall, the projecting ends of the intucked walls are simultaneously folded into flatwise engagement with the opposed or front wall and adhered thereto by a suitable thermo-plastic or other adhesive suitable for the purpose, thereby to effect a closure which will be leak- and sift-proof.

Other objects of the invention reside in the provision of a bag closure which is particularly well adapted to bags of the intucked type, whereby the bag mouth walls may be expeditiously folded into closing and sealing relation to provide a hermetically sealed closure which will withstand rough handling without danger of the contents thereof sifting from the corners or ends of the closed bag top; in the manner of transversely severing the tube from which the tubular bag body blanks are formed whereby an upwardly projecting integral closure flap is provided at the top of the bag body without waste, and without in any way interfering with the formation of the bag bottom; and in the formation of the upper marginal edge portions of the bag top walls whereby a seal tight closure may be effected with a minimum of operations.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claim..

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claim which follows.

In the drawings:

Figure 1 is a front view of a tubular bag body blank showing the novel arrangement of the bag top walls prior to being folded into closing and sealing relation;

Figure 2 is a rear view of Figure 1;

Figure 2 is a view showing the configuration or outline of the bag body blank, when stretched out in a single plane;

Figure 4 is a perspective view of a tubular blank expanded to show the arrangement of the upper marginal edges of the bag top walls;

Figure 5 is a rear view of Figure 4;

Figure 6 is a perspective view of a bag top, on a larger scale, showing the manner of pressing the walls into flatwise relation before closing the bag top, the intucked edge walls being shown extending above the top edge of the front wall;

Figure 7 is a similar view showing the integral flap of the rear wall partially folded over the upper marginal edge of the front wall;

Figure 8 is a view showing the completed closure;

Figure 9 is a detail sectional view substantially on the line 9—9 of Figure 6, on a larger scale;

Figure 10 is a detail sectional view on the line 10—10 of Figure 3;

Figure 11 is a detail sectional view on the line 11—11 of Figure 6;

Figure 12 is a detail sectional view on the line 12—12 of Figure 8;

Figure 12-A is a side elevation of a closed bag top, partially broken away to illustrate the intucked wall portions folded against the front wall;

Figure 12-B is a detail sectional view similar to Figure 10, showing a bag top closure wherein the bag top walls are folded transversely along the line b—b, shown in Figure 6; and

Figures 13, 14 and 15 are views showing the formation of a self opening square bag bottom of more or less conventional design.

In the selected embodiment of the invention herein disclosed, there is illustrated in Figures 1 and 2, a tubular bag body blank comprising front and rear walls 2 and 3, and opposed edge walls 4—4, shown intucked between the front and rear walls.

An important feature of the present invention resides in the formation of a closure which, when sealed, will be substantially sift-proof in construction, whereby finely pulverized materials may be safely shipped in the bags or containers without danger of leakage or portions of the contents of the bags sifting therefrom at the corners of the closed bag tops.

The novel closure herein disclosed requires that the transverse severing of the tube from which the tubular bag body blanks are cut be such that when the tubular bag body blanks are cut from the tube, the upper edge 5 of the front wall 2 will be disposed at an elevation below the upper edge 6 of the rear wall 3, and the upper edges 7 of the intucked edge walls 4—4 will be disposed between the upper edges 5 and 6 of the front and rear walls, respectively, as clearly illustrated in Figures 1 and 6. In other words, if the blank from which the bag body is made is opened up or stretched out, as shown in Figure 3, the upper edge of the blank will be upwardly stepped from its opposed edges, and the lower edge will be similarly stepped or notched to provide the top edge of the next following body blank.

The dot and dash lines 8 and 9, shown in Figure 3, indicate fold lines, and lines 11 and 12 indicate similar fold lines, whereby the blank is divided into the front and rear panels 2 and 3, respectively, and edge wall panels 4—4. The narrow elongated panel 13 shown at the right side of Figure 3 provides a pasting flange to which the marginal

edge portion 10 of panel 2 is pasted in the formation of the tubular bag body blank, shown in Figures 1 and 2.

By severing the tube as above described, when the tubular bag body blanks are formed in the usual manner, the upper marginal edge portion of the rear wall will form, in effect, a flap 14, which extends above the upper edges of the front and edge walls 2 and 4, respectively, of the bag top, as clearly illustrated in Figures 1, 6 and 7.

To close and seal a bag top in accordance with the present invention, the upper intucked edge wall portions and the flap 14 are folded over the upper edge 5 of the front wall 2, and are suitably bonded to the front wall by a suitable adhesive, indicated at 15 in Figures 6 and 7. In practice it has been found that a thermo-plastic or thermo-setting adhesive adequately lends itself for use to secure the bag top walls in closing relation, because they require heat and pressure to complete the seal whereby the adhesive will flow into all of the crevices and interstices of the bag top walls to thereby render the sealed bag tops sift-proof and leak-proof, when completed as shown in Figure 8.

The folding of the upper projecting portions of the edge walls 4 over the top edge of the front wall simultaneously as the flap 14 is folded into sealing engagement therewith, is of extreme importance because by so folding the upper ends of the edge walls over the front wall, there is no possible way that the contents of the bag body may sift between the plies of said walls to the atmosphere.

To close a bag top such as herein disclosed, the flap 14 and the exposed upper edge portions 7—7 of the edge walls 4—4 may be folded along the line a—a into engagement with the adhesive coated surface 15 of the front wall 2 of the bag top, as will be understood by reference to Figures 1, 6, 7 and 12-A, after which heat and pressure is applied to the overfolded bag top walls to thereby cause the thermo-plastic adhesive to become reactivated and thereby bond together the bag top walls to hermetically seal the bag mouth.

In Figures 6 and 7 the flap 14 and projecting top ends 7 of the intucked edge walls are shown folded along the top edge of the front wall 2 (line a—a), but, if desired, the bag top walls may be transversely folded along a fold line b—b, spaced downwardly from the upper edge of the front wall 2, as clearly illustrated in Figures 6 and 12-B.

It will be noted by referring to the blank shown in Figure 3, that the transverse severing of the tube to form the tubular bag body blanks is such that the uppermost edge 16 of the blank, which constitutes the edge 6 of the closure flap 14 shown in Figure 1, extends beyond the fold lines 8 and 11, or in other words, into the edge walls 4—4. By so extending the edge 16, when the edge walls are intucked between the front and rear walls of the bag body, as shown in Figures 1 and 2, the portions 17 are folded around simultaneously with the intucking of the edge walls, as perhaps best shown in Figures 6 and 7, and 12-A, and are subsequently folded into bonding engagement with the adhesive coated surface 15 of the front wall 9, as shown in Figures 7 and 8.

In like manner, the edge portions 18 of the upper edge of the blank shown in Figure 3 extend beyond the score lines 8 and 12, whereby a similar result is obtained at the ends of the top edge 5 of the front wall 2, as shown at 19 in Figures 6 and 7.

In Figures 13, 14 and 15 there is illustrated a

conventional form of bottom, generally known to the trade as an S. O. S., or self-opening square bottom. It will be noted that the particular manner in which the tube from which the tubular bag body blanks are formed is severed to form the bag blank does not in any way interfere with the subsequent formation of the bag bottom, whether it be an S. O. S., satchel type, or pinch bottom. In other words bag bottoms of above types may be formed in the usual manner and by conventional bottoming machinery or equipment. When making S. O. S. on satchel bottoms, the lower portions of the front and rear walls 21 and 22 are expanded or outwardly folded, as shown in Figure 13, whereby the lower portions 22 of the edge walls are inwardly folded. A suitable adhesive 24 may then be applied to the walls as indicated at 24 in Figure 13, and preferably in substantially the pattern illustrated, after which the wall portion 22 is folded inwardly over the edge wall portions 23 along a fold line 25. The wall portion 21 is then folded inwardly over the previously folded wall portions along a fold line 26, to the position shown in Figure 15, thereby completing the formation of the bag bottom.

The bottom of the bag constitutes no part of the present invention and it is therefore deemed unnecessary to further describe the same.

In some instances it may be deemed desirable to fold the top walls transversely on a line spaced downwardly from the upper edge 5 of the front wall 2, as indicated by the line b—b in Figure 6. When the bag top walls are thus folded, an added wall thickness is obtained across the center of the bag top because of the transverse folding of the upper marginal edge portion 5 of the front wall 2, as will be understood by reference to Figure 6. This, however, is not objectionable, and adds somewhat to the strength of the bag closure. By cutting the tubular blank ends as herein disclosed, the flap 14 may be formed without waste, as will be understood by reference to the drawings.

In the drawings I have shown the invention applied to bags in which the walls are of single ply. Obviously, the invention may be applied to multiwall bags with equal results, as will readily be understood.

It will be apparent to those skilled in the art that I have accomplished at least the principal objects of my invention, and it will also be apparent to those skilled in the art that the embodiments herein described may be variously changed and modified without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence it will be appreciated that the herein disclosed embodiments are illustrative only, and that my invention is not limited thereto.

I claim as my invention:

A collapsed gusset bag wherein the top of the bag is composed of front, rear and edge walls and wherein the edge walls are intucked between the front and rear walls, the upper marginal edge portion of the rear wall projecting above the top edge of the front wall to provide an integral closure flap, and the upper ends of the intucked edge walls being disposed at an elevation between the upper edges of the front and rear walls and having substantially triangular portions integral with the edges of the rear wall extending upwardly and outwardly to the ends of the top edge of the rear wall flap and similar portions integral with the edges of the front wall extending downwardly and inwardly to the top edge of the front wall each to a point spaced inwardly from the adjacent side edge of the front wall, said top portion of said collapsed bag having a transverse fold line adjacent to but spaced downwardly from the top edge of said front wall, said front wall having a transverse strip of adhesive extending entirely across said front wall downwardly from said folded line, said adhesive securing said closure flap when said top position of said collapsed bag is folded on said transverse fold line.

ARTHUR E. SCHENCK.

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The following references are of record in the file of this patent:

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GEORGE R KOZUCH, C S R. - OFFICIAL COURT REPORTER - U S DISTRICT COURT - PEORIA, ILLINOIS

IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE SOUTHERN DISTRICT OF ILLINOIS
NORTHERN DIVISION

ST. REGIS PAPER COMPANY, a New York corporation,

Plaintiff,

-vs-

BEMIS COMPANY, INC., a Missouri corporation,

Defendant.

Civil Action

P-Civ. 73-41

B E N C H T R I A L

BEFORE:

HONORABLE ROBERT D. MORGAN,

District Judge.

Peoria, Illinois
Monday, February 11, 1974
Ten O'Clock a.m.

APPEARANCES:

MESSRS. RAYMOND J. McELHANNON
and NORMAN H. ZIVIN
(Cooper, Dunham, Clark, Griffin & Moran)
320 Madison Avenue, New York, New York 10017;
and
MESSR. CLYDE H. HAYNES
150 East 42nd Street
New York, New York 10017;

Testimony of
Hugh R. Connolly

PLAINTIFF RESTS.

THE COURT: Based on the presumption of validity, I assume the position taken by plaintiff in its trial brief is acceptable and are you proposed to proceed now?

MR. POWERS: Yes, Your Honor. I wish to call Mr. Hugh R. Connolly.

HUGH R. CONNOLLY,

called as a witness on behalf of the defendant, after being first duly sworn, upon his oath, testified as follows, in response to

DIRECT EXAMINATION

BY MR. POWERS:

Q Will you please state your name, age and address?

A My name is Hugh R. Connolly, I'm 46 years old. I live at 10919 North Oak Knoll Terrace, Minnetonka, Minnesota.

Q What is your occupation, Mr. Connolly?

A I'm manager of process engineering for the Bemis Company in their research department in Minneapolis.

I also function as patent liaison for the company.

Q How long have you been with the Bemis Company?

A Approximately thirteen years.

Q How long have you and I worked together on patent matters?

A Approximately twelve years.

Q Are you familiar with the three patents in suit?

A I'm familiar with the first two and a little bit familiar with the last one involved.

Q Did I ask you to prepare any bag samples for this suit?

A Yes, you did.

MR. POWERS: Would your Honor like to look at one of these?

(WHEREUPON, item heretofore marked at pre-trial conference hereinafter referred to as Defendant's Exhibit Number 15 for identification.)

BY MR. POWERS:

Q I hand you an item marked Defendant's Exhibit 15 and ask you to identify it.

MR. McELHANNON: Your Honor, I object to this sample. I don't know what the purpose of this is. It is something created by the defendant. I don't know any prior art basis for it or anything else.

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is that what I am looking at? 16: "Sample of multi-wall gusseted pinch-bottom, open-mouth bag made according to Figure 14 of Goodrich and Waxlax patent 3,687,356." No exceptions there, are there?

A No, I don't hear any.

Q As a matter of fact, the bag as made -- doesn't have any adhesive applied to it is another distinction, is that true?

A Excuse me, I didn't understand your question.

Q I say the drawing shows a bag with adhesive applied over these areas and the bag you have doesn't have that.

A That's correct.

Q That's another difference, isn't it?

A That's right.

Q Now, let me show you with reference to this Schenck patent, let me show you Defendant's original Exhibit 17. Do you have a copy of that?

A I don't have one up here.

Q Let me see what that says. It says here "Exhibits, Defendant's Exhibit 17, sample of single ply gusseted pinch-bottom open-mouth bag made according to Schenck patent."

Now, will you show me any drawing in that patent that closely resembles that bag you have in your hand,

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DX-17?

THE COURT: Pardon me, Mr. McElhannon. The original 17 is not being offered. Apparently they have substituted it and I don't know whether you are going into the differences or not. And as I understand it, it is not being offered. I don't know what in the world it can do to prove or disprove any issue in this case.

MR. McELHANNON: The point is, Your Honor, they listed this as an Exhibit of a bag made according to this patent.

THE COURT: That's perfectly clear on the record.

MR. McELHANNON: Then they saw it wasn't made according to that patent and now they want to put in a modified exhibit.

THE COURT: That's exactly right. But for that reason I don't know what the original has to do with the case at the present posture.

MR. McELHANNON: All right, then I will show you the substituted exhibit 17.

A I've got one here.

Q That's a bag made in accordance with what the figures of that patent?

A Figures 1 and 2.

Q Now, referring to this bag, doesn't the patent state

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that the bottom of the bag is made with a square bottom closure?

A Which exhibit do you have there?

Q I've got this substituted exhibit DX-17.

A As I recall, he says the bottom may be a pinch type closure or a square bottom closure.

Q How would you make a pinch-bottom closure with this bag, DX-substituted 17?

A By adhesive and fold it over.

Q Wouldn't the bag leak?

A You want my opinion on that?

Q Yes.

A Yes, it would.

Q I thought it would. So I can't get into the other exhibit, that's the real reason you changed it.

MR. POWERS: Objection to that, Your Honor.

MR. McELHANNON: All right, I will withdraw it.

MR. POWERS: Mr. McElnannon doesn't know the reason why we changed it.

MR. McELHANNON: I think I do know.

Q Now, we will get to this substituted DX-18. I think you testified this is a multi-walled bag made according to the Schenck patent; is that correct?

A That's correct, bag tube, sir.

Q What?

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A Multi-walled bag tube.

Q Tube, yes. Well, since the Schenck patent doesn't describe anything about making a multi-wall bag, except passing reference to such, who instructed you to make this bag? Is there any description in that patent of how to make a bag like that? If there is, read it to me.

A Read the same paragraph I read previously. "In the drawings I have shown the invention applied to bags in which the walls are of single ply. Obviously the invention may be applied to multi-walled bags with equal results."

Q Well, "equal results," the "equal results" if you close -- made a closure of the bottom of this bag with a pinch closure, the "equal results" would be a leakage of this bag, wouldn't it?

A By "bottom" do you mean the one with the cut outs?

Q That's right.

A That's correct.

Q It would leak?

A That's correct.

Q Is that a practical bag in your opinion that you could sell to industry?

A No, sir.

Q Either one of them?

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A Either the single or the multi-wall?

Q Either the single or multi-wall with the pinch bottom?

A Not with the bottom folded over like.

Q Isn't that the reason it said to make a square bottom on this bag to cover up the leakage you'd otherwise get, isn't that what he is talking about?

A He may well have.

Q Well, you read the patent, didn't you?

A I don't recall seeing any comments to that effect.

Q And didn't he also say that his invention is directed to closing the top of the bag?

A That's correct.

Q Isn't that what his invention was?

A That is correct.

Q It had nothing to do with the bottom of the bag. And didn't he tell you to make the bottom of the bag like that shown in the closure at the bottom of the bag like shown in Figures 13 to 15?

A I think he talked about that.

Q The square bottom?

A Yes.

Q Well, like shown in the chart here. That was to close up the holes that would otherwise cause leakage; is that right?

A I would imagine that's right.

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§ 101. Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

§ 103. Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

§ 282. Presumption of validity; defenses

A patent shall be presumed valid. Each claim of a patent (whether in independent or dependent form) shall be presumed valid independently of the validity of other claims; dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting it.

The following shall be defenses in any action involving the validity or infringement of a patent and shall be pleaded:

(1) Noninfringement, absence of liability for infringement, or unenforceability,

(2) Invalidity of the patent or any claim in suit on any ground specified in part II of this title as a condition for patentability,

(3) Invalidity of the patent or any claim in suit for failure to comply with any requirement of sections 112 or 251 of this title,

(4) Any other fact or act made a defense by this title.

In actions involving the validity or infringement of a patent the party asserting invalidity or noninfringement shall give notice in the pleadings or otherwise in writing to the adverse party at least thirty days before the trial, of the country, number, date, and name of the patentee of any patent, the title, date, and page numbers of any publication to be relied upon as anticipation of the patent in suit or, except in actions in the United States Court of Claims, as showing the state of the art, and the name and address of any person who may be relied upon as the prior inventor or as having prior knowledge of or as having previously used or offered for sale the invention of the patent in suit. In the absence of such notice proof of the said matters may not be made at the trial except on such terms as the court requires. (Amended July 24, 1965, Public Law 89–83, sec. 10, 79 Stat. 261.)